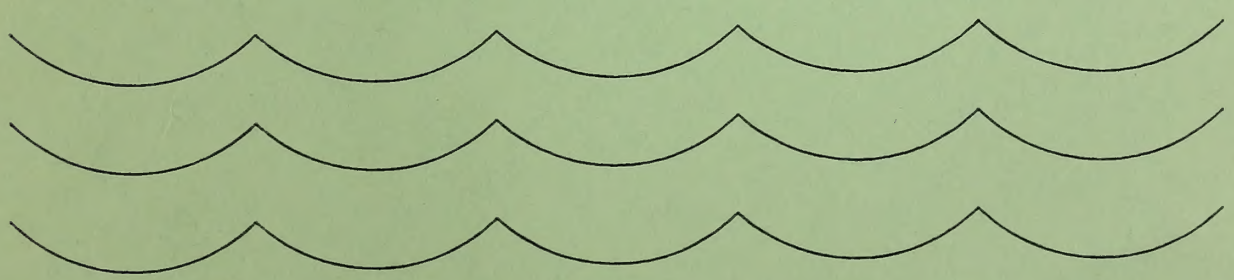
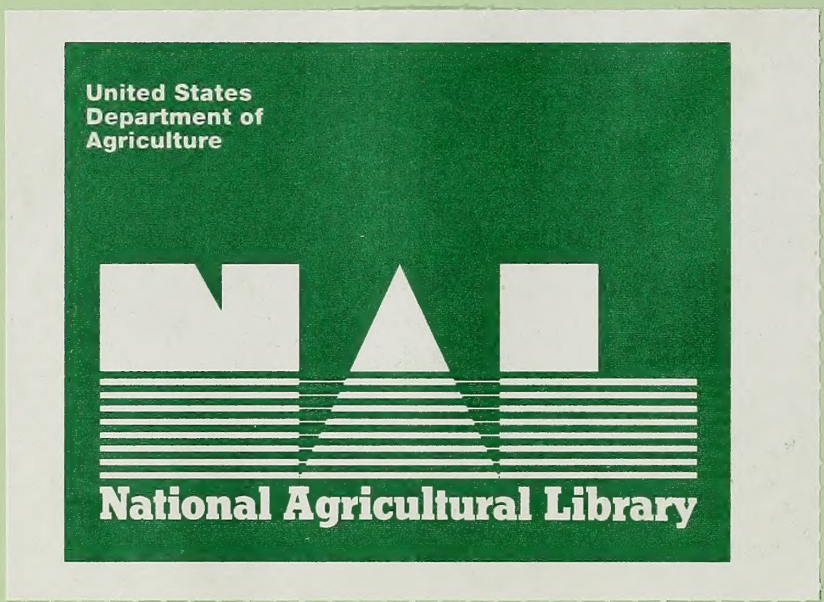
A FLOOD PLAIN MANAGEMENT STUDY

For the Town of West Fairlee, Vermont

PREPARED IN COOPERATION WITH

- Town of West Fairlee
- White River Natural Resources Conservation District
- Vermont Department of Environmental Conservation





FOREWORD

The Soil Conservation Service, U.S. Department of Agriculture, prepared the information in this flood plain management report. Officials of the Vermont Agency of Natural Resources and Department of Environmental Conservation, the White River Natural Resources Conservation District, and the Town of West Fairlee cooperated in compiling the report.

The flood hazard and land use information should serve as a technical base for flood plain management programs. State and local governments, as well as the public, will benefit from knowledge of flood information on the Ompompanoosuc River and its tributaries. A program to minimize future flood damages can be developed from this information. Describing the legal aspects and methods of conducting management programs is not within the scope of this report. However, some general recommendations are included.

We thank the many people who contributed information for the study. We also thank the landowners who gave permission for field surveys.

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FLOOD PLAIN MANAGEMENT STUDY
TOWN OF WEST FAIRLEE
ORANGE COUNTY, VERMONT

Introduction

The Vermont Agency of Natural Resources (VT-ANR), the Town of West Fairlee, and the White River Natural Resources Conservation District (NRCD) coordinated in this flood plain management study and report preparation. The VT-ANR provided overall coordination for the study and assisted with the field surveys. The Town of West Fairlee has provided public participation, made necessary arrangements for field surveys, provided base maps, and duplicated and distributed this report. The NRCD has also cooperated in the effort.

The state and local entities requested the flood plain management study to provide detailed flood frequency characteristics and other analyses for a major portion of the flood plain system within the Town of West Fairlee. The town was experiencing increasing pressures for development of flood prone areas and lacked detailed flood plain information.

The U. S. Department of Agriculture, Soil Conservation Service (SCS) participated in the study and preparation of this report under the authorities of Section 6, Public Law 83-566, as amended; Executive Order 11988, Flood Plain Management, dated May 24, 1977; Recommendation 3, a Uniform National Program for Flood Plain Management, Water Resources Council, September 1979; and U. S. Department of Agriculture's Secretary's Memorandum Nos. 1606 and 1607, November 7, 1966.

The Vermont Department of Environmental Conservation, a department within the VT-ANR, is responsible for making studies, policies, and plans for the use, development, and protection of Vermont's water resources under Chapter 37, Title 10, of the Vermont Statutes Annotated.

This report provides a description of the flood plain system including its natural values, flood-frequency-stage-inundation relationships, and alternatives for flood plain management consideration.

Study Area Description

The Ompompanoosuc River Watershed is located in east central Vermont in the Connecticut River basin (Hydrologic unit number 01080103040).

It has a drainage area of more than 87,000 acres and includes parts of ten towns: Norwich, Sharon, Thetford, Strafford, West Fairlee, Fairlee, Veshire, Tunbridge, Chelsea, and Corinth. The main populated areas are West Fairlee, Post Mills, Thetford Center, Union Village, South Strafford, and Strafford with a combined population of about 3,500 people.

The headwaters of Ompompanoosuc River begin at the Piedmont Foothills of Strafford, Tunbridge, Chelsea, Veshire, Corinth, and West Fairlee and flow in an easterly direction emptying into the Connecticut River. The watershed has several lakes and ponds. They include Lake Fairlee (463 AC), Miller Pond and Lake Abenaki. The river has numerous tributaries with the principal streams being Algerine Brook, Middle Brook, Blood Brook, Barker Brook, Avery Brook, Jackson Brook, Lord Brook, Abbot Brook, Downer Brook, Old City Brook, Clover Hill Brook, and Drew Cemetery Brook.

There is a flood control structure in this watershed on the main stem of the Ompompanoosuc River, operated by the Corps of Engineers, at Union Village, known as the Union Village Dam. The flood levels in Strafford are not affected by the Union Village Dam.

This report provides detailed information on 3.1 miles of the Ompompanoosuc River, 1.0 mile of Algerine Brook, 3.8 miles of Middle Brook, and 1.8 miles of Blood Brook within the town of West Fairlee, Vermont. The Sheet Index Map provides locations of this studied stream reach. The drainage areas of the Ompompanoosuc River, Algerine Brook, Middlebrook, and Blood Brook are 30.0, 9.6, 10.4 and 4.0 square miles respectively.

The Town of West Fairlee is located at 43° - 55′ north latitude, 72° - 16′ longitude. It has a cool, humid climate. Average annual precipitation is 36 inches, which includes an average of 75 inches of snowfall. The mean annual temperature is 41° F with a winter minimum of -29° F and a summer maximum of 94° F.

Natural and Beneficial Values

The Vermont State water quality classification is Class B for the Ompompanoosuc River, Middle Brook, and Blood Brook in the Town of West Fairlee. This designation implies that the waters are suitable for bathing, recreation, fish habitat, irrigation, and public water supply with filtration and disinfection. Generally, Class B waters also have good aesthetic values. No significant degradation in water quality has been identified in the river or in the two brooks, and no aquifer protection areas have been delineated in the town.

There are several opportunities for water-based recreation in West Fairlee. During spring runoff the Ompompanoosuc River provides good canoeing and kayaking for a one mile section of river. Lake Fairlee, which partially resides in the town, provides opportunities for boating, swimming, and fishing. Summer vacation homes are common along the shore of the Lake.

The Ompompanoosuc River, its' tributaries, and Lake Fairlee provide many opportunities for good fishing. The main river supports both rainbow and brown trout, while Middle and Blood Brooks contain native brook trout populations. In addition to trout, other common species of sport fish are found in Lake Fairlee.

Currently underway is an inter-agency project to restore Atlantic salmon to the Connecticut River and its' tributaries. At this time salmon have been restored upriver to the Wilder Dam, approximately 6.5 miles below the mouth of the Ompompanoosuc River. Future plans call for additional fish ladders and other access, which would extend the fishery throughout the basin. At this time no specific plans have been formulated to provide access for salmon above the Union Village Dam in Thetford.

The Ompompanoosuc Watershed is dominated by northern hardwoods, interspersed with open farmlands and small wetlands. This mixture of vegetation provides habitat for deer, moose, bear, songbirds, furbearing mammals, and waterfowl. High quality deer wintering yards have been identified along approximately 1 mi. of the river in West Fairlee, 5.5 mi. of Middle Brook, and 0.25 mi. of Bear Notch Brook. A 0.25 mi. section of Middle Brook is also frequently used by various types of waterfowl. A 2 mi. long mountain pass along Bear Notch Brook is recognized as an unique natural area.

No State or Federally listed threatened or endangered species have been identified in the Ompompanoosuc Watershed. However, transients such as the Bald eagle and the Peregrine falcon may visit the watershed during spring and fall migrations.

The Town of Bradford owns a several hundred acre Town Forest, a portion of which is located in West Fairlee. There are no other large tracts of publicly owned lands in the town.

The mountain pass along Bears' Notch Brook is the only geologic feature in the town that has been recognized as noteworthy or unique.

No prehistoric sites are currently known to exist in the Ompompanoosuc watershed. Based on knowledge of pre-historic mans' habits and topographic features, the watershed is not suspected to contain any prehistoric archaeological sites.

The town does not contain any sites or structures that are listed on the State or National Registers of Historical Places.

Factors Affecting Flooding

Obstructions to floodflows can have a tremendous impact on flood elevations. Obstructions can be either natural or man-made. Natural obstructions that impede floodflows may be sharp bends in stream alignment, channel constrictions due to topography of adjacent terrain, shoaling, rock outcrops in the stream or on the flood plain, ice jams, and vegetation such as grass, brush or trees. As floodflow is impeded, the velocity of the water decreases and the depth of flow increases; this results in flooding along streams. Man-made obstructions include bridges, culverts, dams, docks, levees, and earthfills. These man-made obstructions may severely hamper flow and cause a backwater condition, which creates more flooding than what would normally occur with only natural obstructions present.

During floods, trees, brush, and other debris may be washed downstream to collect on bridges and other obstructions to flow. This is often referred to as a "log jam". As the floodflow increases, masses of debris break loose and a wall of water and debris surges downstream until another obstruction is encountered. Debris may collect against a bridge until the load exceeds its structural strength and causes the bridge to fail.

The limited capacity of obstructed bridges, debris plugs at bridge waterway openings, or a combination of these factors cause flooding upstream and erosion around bridge approach embankments. This erosion can cause damage to the overlying roadbed. In general, obstructions restrict floodflows and result in overbank flows. Unpredictable areas of flooding, destruction of or damage to bridges, and an increased velocity of flow immediately downstream can also occur from obstructed bridges.

It is impossible to predict the degree or location of debris accumulation. Therefore, in the development of flood profiles for this report, it was necessary to neglect the possibility of log-jams and the possiblity of debris to block bridges or culverts.

Flood Problems

The Town of West Fairlee has experienced severe flooding this century during November 1927, March 1936, September 1938, June 1973, and August 1976. The Town experienced major streambank and property damage during these floods.

Within the study area approximately five residential structures would experience flooding in the 100 year storm event. Most of the damage would be restricted to basement flooding.

West Fairlee also has about 1.5 miles of shoreline on Lake Fairlee. This shoreline was not included in the flood study so is not part of this report. The maximum fluctuation in the lake level, however, is about two feet. Another structure impounding water is Beebe Pond on Middle Brook. Flash boards are used to control the water level. Operators of the structure indicate that they only adjust the outlet by about 2 flash boards depending on seasonal variations. This minor adjustment would not affect the upstream water levels during a major 100-year flood event.

In general the residences that would be exposed to flooding at the 100 year frequency would experience relatively minor damage. Flooding would generally be confined to the basement, with some shallow depths expected on the first floor of several homes. Precise dollar damages would be difficult to quantify without close examination of the properties threatened. Table 1 provides a further description of the flood hazard.

Although the existing flood damage potential is not great, the Town of West Fairlee is experiencing development pressures from the nearby Hanover-Lebanon region. The flood plain needs to be properly managed to avoid high flood damage potential in the future.

Depths of flow in the Ompompanoosuc River range from 4.8 feet at section Om11 to 11.8 feet at section OM21 and OM24 with velocities of about 2.7 fps at section OM23 to 8.1 fps at section OM20. These values do not include the structure at section OM14.

Figures 1 through 4 show the water surface level of the 100 and 500-year flood at selected localities.

Table 1 Characteristics of Potential Flood Damages
Town of West Fairlee, Vermont

Stream	Type of Land Use	Acres by Flood Frequency 100-Year	500-Year
			(Additional Acres)
Ompompanoosuc River	Open	78	3
	Woodland	24	0
	Residential and Structural	1	0

(Cont'd)

Table 1 Characteristics of Potential Flood Damages
Town of West Fairlee, Vermont

Stream	Type of Land Use	Acres by Flood Frequency 100-Year	500-Year
			(Additional Acres)
Algerine Brook	Open	0	0
	Woodland	12	0
	Residential and Structural	1	1
Middle Brook	Open	137	3
	Woodland	75	1
	Residential and Structural	1	0
Blood Brook	Open	27	1
	Woodland	34	1
	Residential and Structural	0	0
	Total	390	10

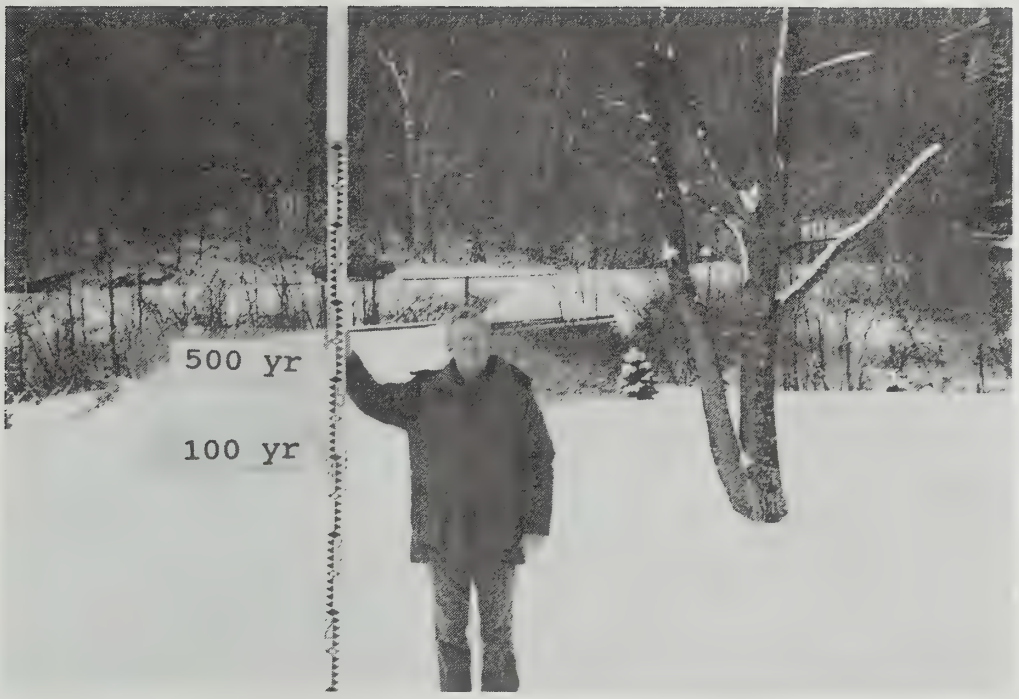


Figure 1. On private driveway, east of Rt. 113 and Ompompanoosuc River about 1 mile south of Vershire townline (Rt 113 in background)

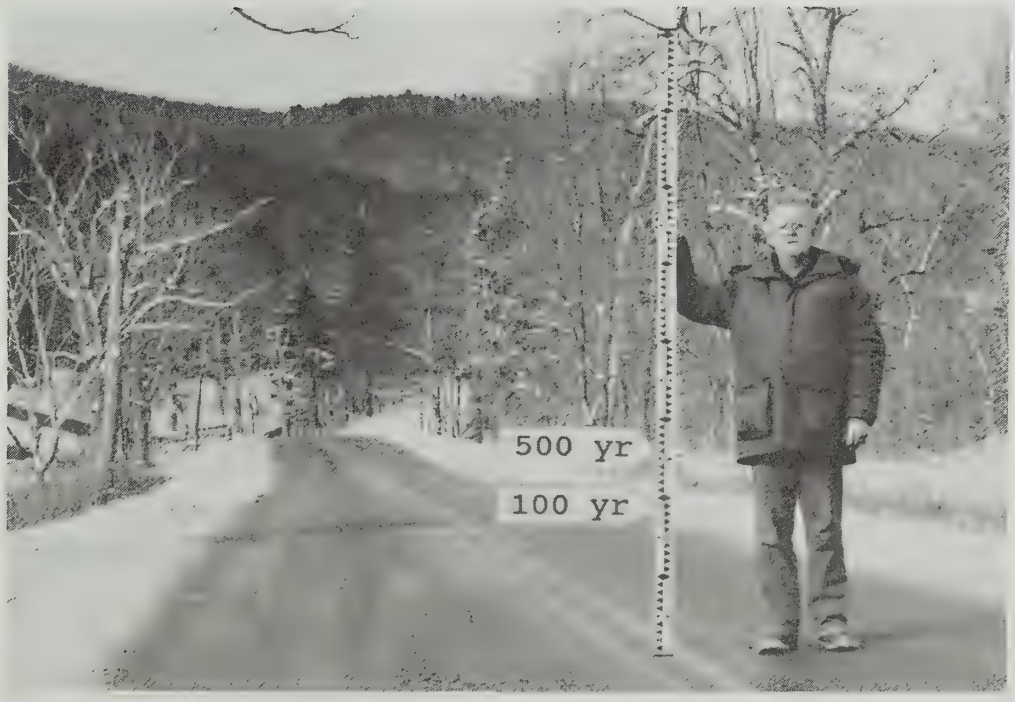


Figure 2. On crossroad to Lake Fairlee near Thetford townline

Figure 3. On Middle Brook road at first crossing of Middle Brook upstream of Beebe Pond

Figure 4. At first Blood Brook crossing upstream of Rt. 244, crossing in the background

Existing Flood Plain Management

In Vermont, municipalities have the authority to regulate development in flood hazard areas under Title 24 VSA chapter 91. Title 10 VSA chapter 32 authorizes the Secretary of the Agency of Natural Resources to designate flood hazard areas and to assist the towns with flood hazard regulations. Title 25 VSA subsection 4409 requires towns to submit a report to Environmental Conservation before issuing a permit for development in a designated flood hazard area.

Several other Laws and regulations administered by the state contain special requirements for development in flood hazard areas. Some of these are:

Act 250 (10 VSA chapter 151) administered by the Environmental Board and District Environmental Commissions;

Health Regulations administered by the Protection Division of the Agency of Natural Resources;

Storage of Flammable Liquids (20 VSA section 2721) administered by the State Fire Marshal;

Stream Alteration (10 VSA chapter 28) administered by the Department of Environmental Conservation;

Dam Construction (10 VSA chapter 29) administered by the Department of Environmental Conservation.

Alternatives for Flood Plain Management

Present Condition

Allowing the current flooding situation to continue is a possibility although undesirable alternative. Essentially the flood damages enumerated in Table 1 would continue. Lack of control over development in the flood plain could result in further encroachment by development with the accompanying increases in flood damages.

Land Treatment

Inclusion of conservation practices for erosion and runoff control in new developments and building areas would help to assure protection against induced flooding from this source. Control of erosion and sedimentation, to protect stream capacities is an important consideration.

Nonstructural Measures

Floodproofing of buildings and other high value property in the flood plain is a particularly appropriate measure for reducing losses to individual properties. A flood warning system or plan would be of limited value as a nonstructural measure because the time to respond with emergency protection activities is only a matter of a few hours. Relocation of some residences and buildings or acquisition to eliminate risks may be appropriate in some instances. The Town of West Fairlee plans to adopt formal flood plain regulations which will be very helpful in assuring development in the future will not sustain frequent, severe flood losses. The national flood insurance program has made affordable flood insurance available to flood-prone property owners through private underwriters. Owners of existing flood prone property should consider flood insurance as a means of reducing their flood loss risk. Other nonstructural approaches such as emergency preparedness and building or development codes should be considered.

Structural Measures

There appears to be little opportunity for modifying floods through headwater impoundments (dams) or channel enlargement.

Combinations of Alternatives

Several of the above alternatives could be combined in a number of ways to provide a plan to address the flooding problem.

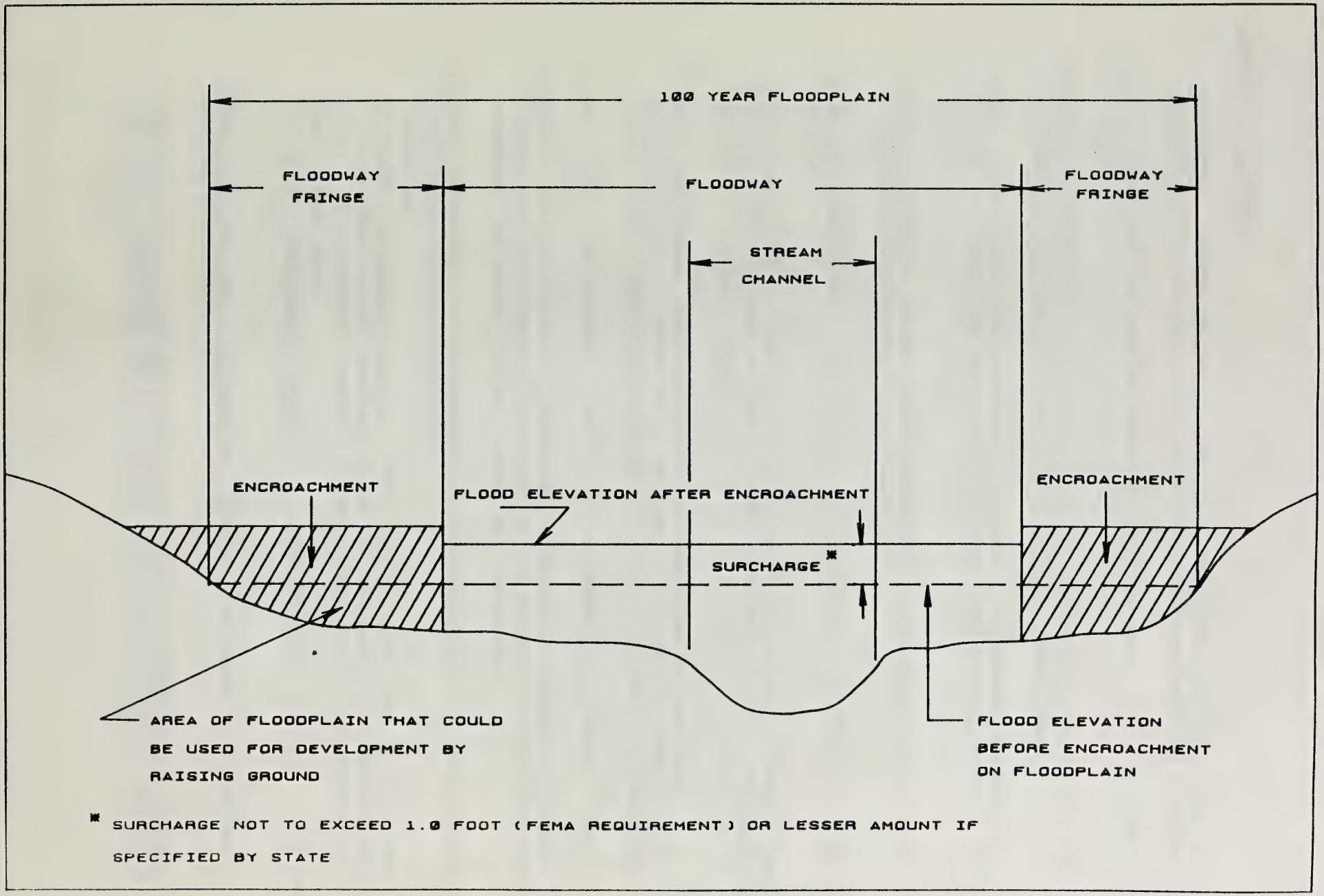
Floodway Determination

Any development activity that raises the elevation of the flood plain will restrict flow and increase flood heights. Communities have found benefits from allowing carefully controlled development to occur in the flood plain fringe provided resulting increases in flood hazard can be tolerated. The National Flood Insurance Administration uses the concept of floodway as an aid in evaluating such situations. This concept partitions the 100-year flood area into a floodway and a floodway fringe. The floodway fringe is the portion of the flood plain that can be completely obstructed without increasing the water-surface elevation of the 100-year flood more than one foot at any point. The floodway is the remaining portion of the channel and the flood plain (See Figure 5).

Flood Hazard Maps

The photomaps entitled "Flood Hazard Areas" (sheets 1 through 10 in Appendix A) show the 100-year and 500-year flood areas. These areas are depicted based on present land use and management conditions. The flood boundaries show the approximate location on the ground for general reference purposes. The 500-year flood boundary is to be interpreted as being close to the 100-year flood boundary where it is not separately mapped. The reason for this is that the valley side slopes along many reaches of stream are steep and the map scale small. This yields a 500-year boundary which is nearly contiguous with the 100-year boundary. Along such reaches it is therefore not mapped.

Flood boundaries were taken from the profiles and <u>may</u> not be mapped as accurately as the profiles themselves. For this reason it is recommended that you locate the property of interest on the profiles and establish the flood boundary (for desired frequency) on the property by field survey. Appendix A provides a tabulation of elevation reference marks that can be used in connection with this activity.



FLOODWAY SCHEMATIC

Figure 5

Glossary of Terms

backwater. High water caused by downstream obstruction or restriction, or by high stage on an intersecting stream.

BM. Benchmark of established elevation used for vertical reference.

bottom of culvert. Elevation of the lowest flow surface of a culvert (or pipe) through which flood flows pass.

cfs. Cubic feet per second - a unit of discharge that is equal to the flow of one cubic foot per second past a given point.

cross section. Shape and dimensions of a channel and valley perpendicular to the line of flow.

elev.-bridge deck. Elevation of a roadway across a bridge or culvert.

elev.-low chord. Elevation of lowest structural "beam" that limits the height of the bridge opening; or may indicate the top of a culvert opening.

elev.-low road. Elevation of low point on a roadway approaching or crossing a bridge or culvert - shown only if lower than elev.-bridge deck at a particular road section.

fps. Feet per second - units of velocity of stream flow.

flood. An overflow of lands not normally covered by water; a temporary increase in streamflow or stage; or the discharge causing the overflow or temporary increase.

flood frequency. An expression of how often a flood of given magnitude can be expected.
Examples:
10-year frequency flood. The flood which can be expected or exceeded on an average once in 10 years; or which would have a 10 percent chance of being equaled or exceeded in any given year.
100-year frequency flood. ....one percent change....in any given year.

flood peak or peak discharge. Highest discharge attained during a flood.

flood plain or flood-hazard area. Lands adjoining a stream (or other body of water) which has been or may be covered with water.

flood profile or profile. A plotted or imaginary line defining the highest water surface elevations along a stream during a particular flood.

flood-hazard area. See flood plain.

flood routing. Computation of the changes in the rise and fall in streamflow as a flood moves downstream. The results provide hydrographs of discharge versus time at given points on the stream.

floodway. The portion of the stream channel and flood plain that must be kept free of encroachment to prevent flood stages from rising more than 1 foot higher than natural conditions.

frequency-discharge curve. A plotted line showing the recurrence interval (or flood frequency) of discharges at a stream gage, surveyed cross section, or other station along stream. (Used with a stage-discharge curve to determine the high water elevations resulting from selected flood discharges at that station on the stream.)

hydrograph. A curve showing the rise and fall of flood discharge with respect to time at a specific station on the stream.

land use. Classification of type of vegetation or other surface cover conditions on a watershed - used (with a similar classification of soils) to indicate the rate and volume of flood runoff.

NGVD. National Geodetic Vertical Datum, the normal standard of elevation reference.

peak discharge or flood peak. The highest rate of runoff (discharge) attained during a flood.

profile. See flood profile.

runoff. That portion of the total storm rainfall flowing across the ground or other surface and contributing to the flood discharge.

stage-discharge curve. A plotted curve showing elevations resulting from a range of discharges at a surveyed cross section, stream gage, or other point on a stream.

top of culvert. Elevation of the uppermost flow surface of a culvert (or pipe) through which flood flows pass.

TBM. Temporary benchmark used for vertical reference.

watershed. A drainage area which collects and transmits runoff to the outlet of the drainage basin.

REFERENCES CITED

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11. National Engineering Handbook, Section 4, Hydrology; U.S. Department of Agriculture, Soil Conservation Service; Washington, D.C.; November 1954, Revised August 1980.

12. Vermont Agency of Environmental Conservation. 1986, Vermont River Study, Waterbury, VT.

13. Vermont Fish and Game Department. 1962 Vermont Stream Survey. Montpelier, VT.

14. Flood Plain Information, Corps of Engineers.

APPENDIX A

USE OF APPENDIX

This appendix provides the data needed to use this report. Included in this appendix are:

Flood Plain area Photomaps

The Flood Plain Area Photomaps can be used for decisions where precise elevations are not required; for example, a brief check of the appropriate photomap may indicate that a proposed building site is obviously in or out of the flood plain.

Flood Profiles

On the reverse of each photomap are flood profiles, water surface elevation tabulations. These can be used with the photomaps to determine flood elevations at any point along the streams in the study area as follows:

1. On the appropriate photomap find the point on the stream where the proposed building is to be located; then scale the distance along the stream to the nearest cross section.

2. On the appropriate flood profile sheet, scale the distance determined in Step 1 from the cross section back to the original stream location, and read the elevation of the desired flood frequency line.

3. Transfer the elevation determined in Step 2 to the ground from the nearest established benchmark.

   If the point on the ground is at one of the surveyed cross sections, the elevation can be read directly from the tabulation of water surface elevations.

Investigation and Analysis

Investigations conducted and analysis used are described.

Safety and Protection

Steps that can be taken by individuals during a flood are discussed.

Tabulated Data

Tabulated elevations and discharges for each cross section of the 10, 50, 100, and 500 year storms.

Benchmark Data

Description and elevation of reference marks used in the study.

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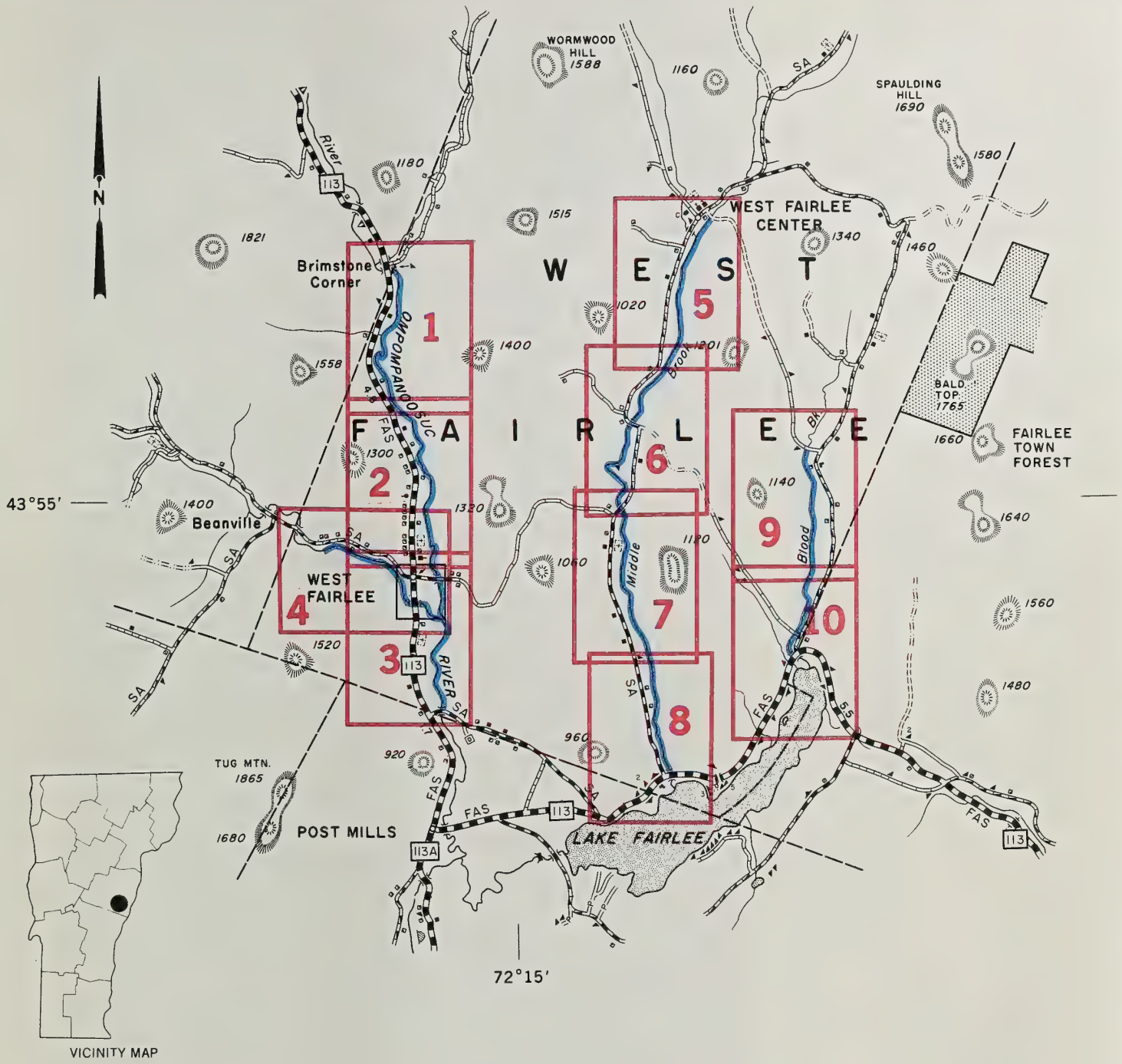

VICINITY MAP

LEGEND

10 SHEET COVERAGE

STREAM REACHES

SHEET INDEX MAP

FOR THE

WEST FAIRLEE FLOOD PLAIN MANAGEMENT STUDY

OMPOMPANOOSUC RIVER, MIDDLE BROOK AND BLOOD BROOK

ORANGE COUNTY, VERMONT

0 1 2 MILES

0 1 2 3 KILOMETERS

BASE SOURCE:
ORANGE COUNTY GENERAL HIGHWAY MAP
PREPARED BY THE DEPARTMENT OF HIGHWAYS,
HIGHWAY PLANNING DIVISION, VERMONT.
POLYCONIC MAP PROJECTION BASED ON
U.S. GEOLOGICAL SURVEY MAPS.

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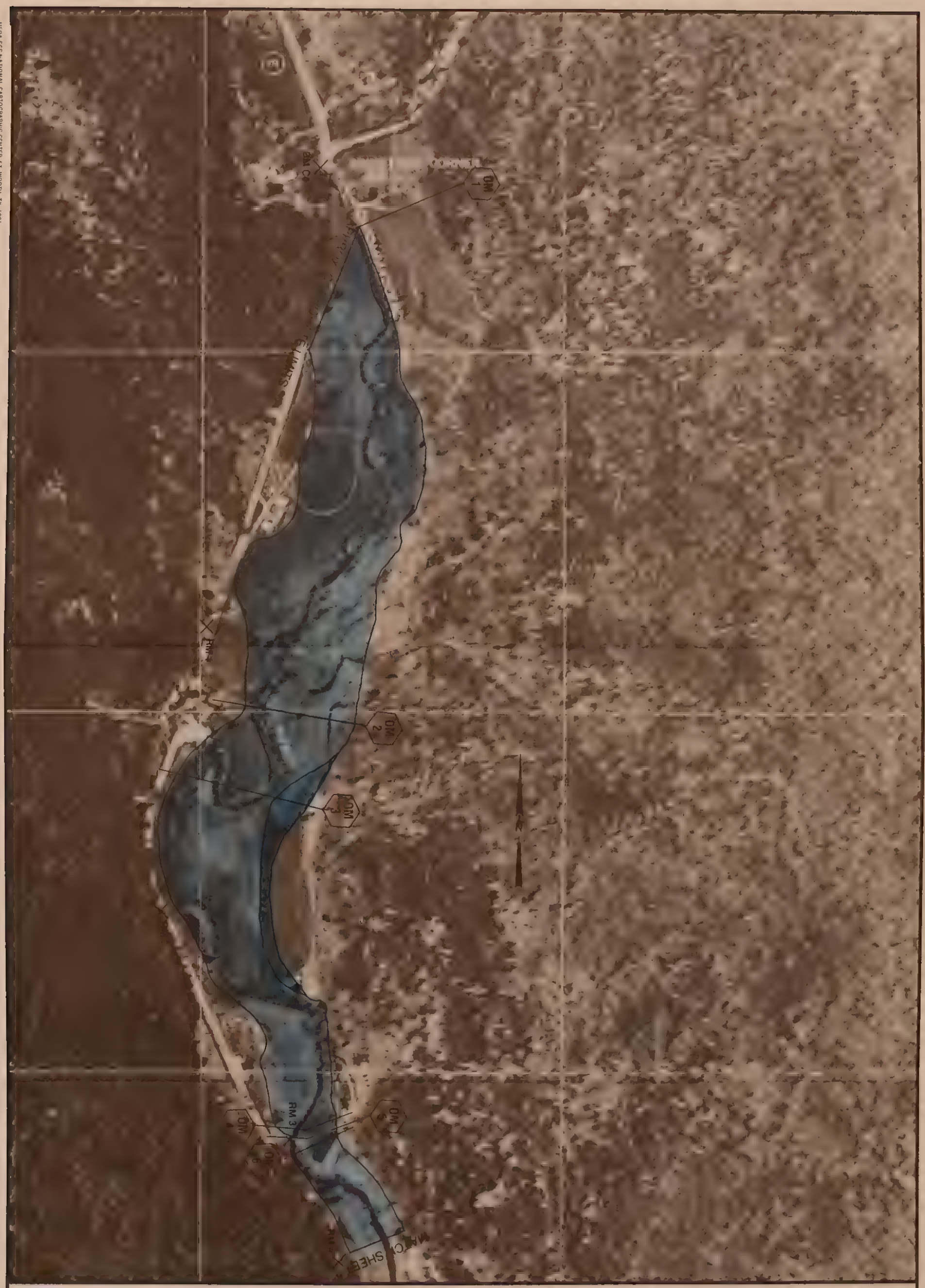

SHEET 1 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

FLOOD HAZARD AREA

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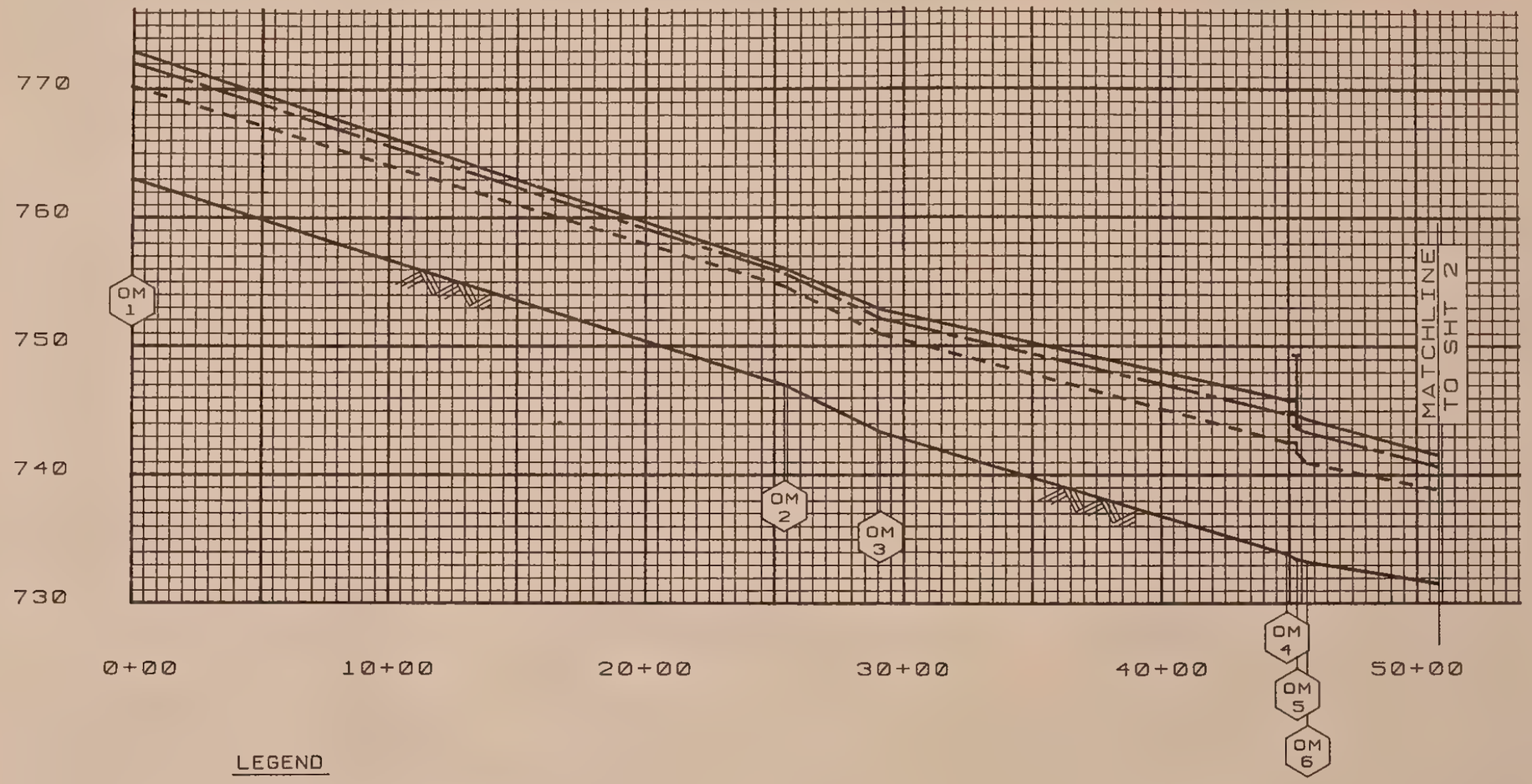
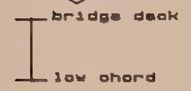
OMPOMPANOOSUC RIVER



LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- CROSS SECTION LOCATION
- RIVER CROSSING



All elevations in feet (NGVD)

FLOOD PROFILES

OMPOMPANOOSUC RIVER

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SOIL CONSERVATION SERVICE
— WEST FAIRLEE —
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

OM 2 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 2 BENCH MARK

Note Flood Boundaries shown may vary from actual ground location. See narrative for use of data

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS INC

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SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

FLOOD HAZARD AREA

OMPOMPANOOSUC RIVER

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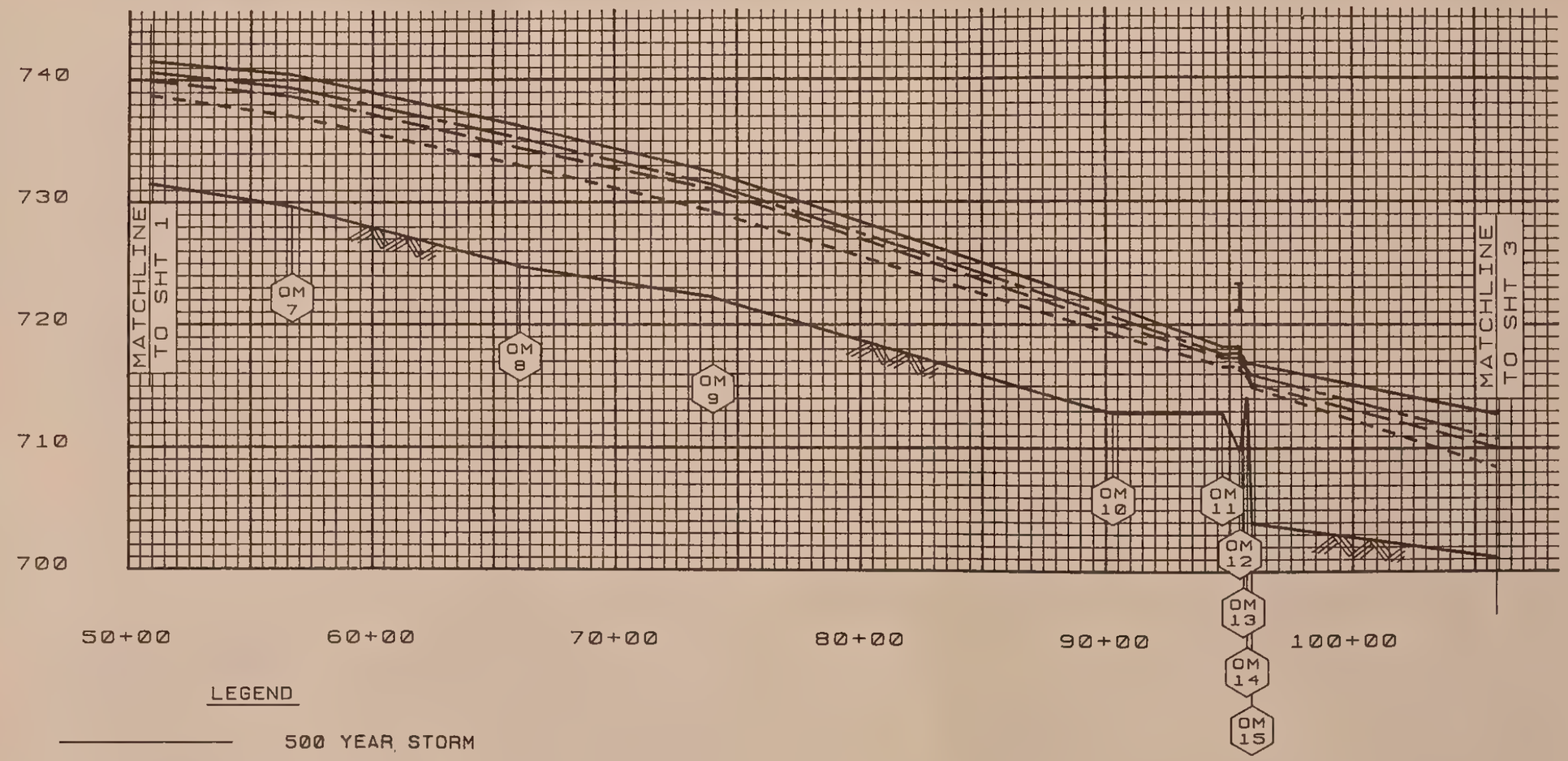

LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- CROSS SECTION LOCATION
- RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

OMPOMANOOSUC RIVER

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SHEET 3 OF 10

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ORANGE COUNTY, VERMONT

FLOOD HAZARD AREA

OMPOMPANOOSUC RIVER

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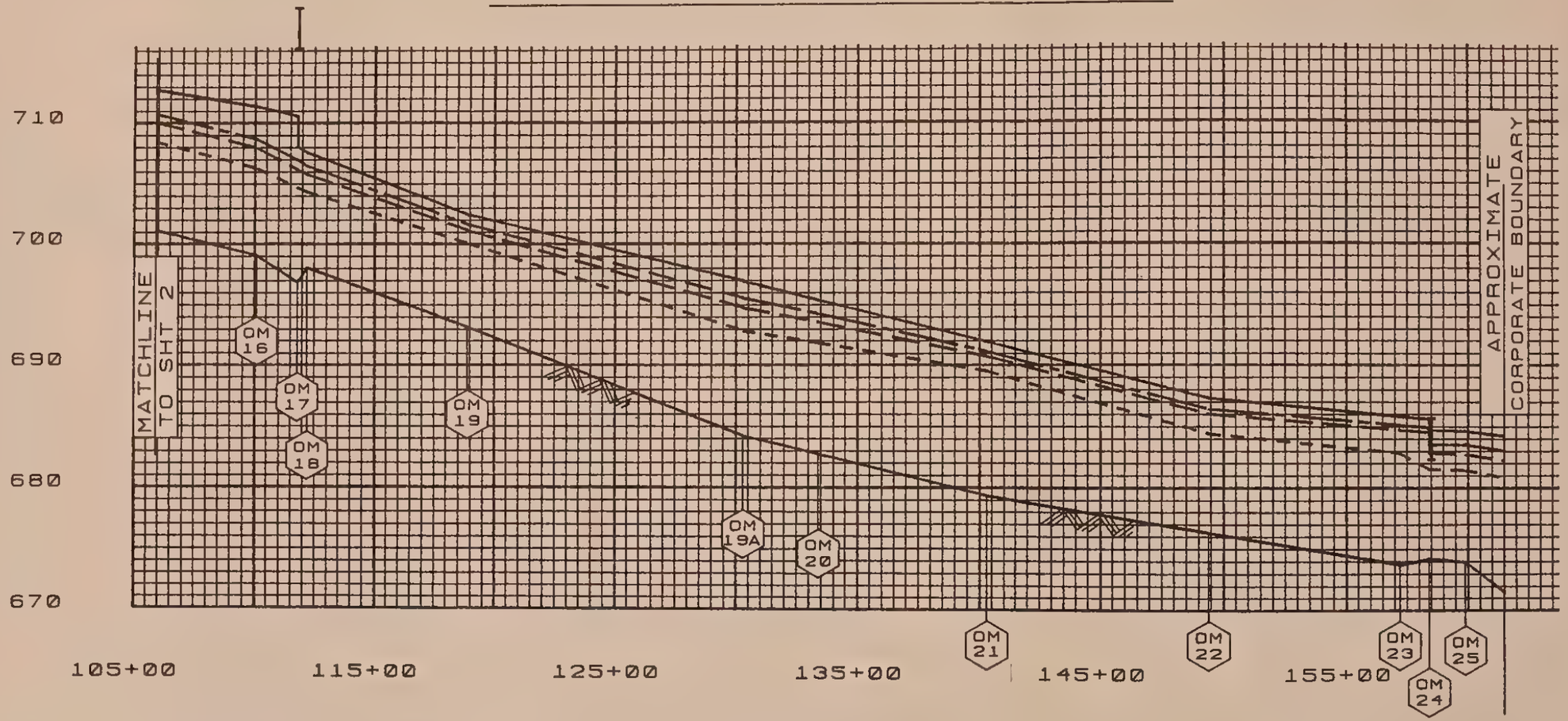
OMPOMPANOOSUC RIVER



LEGEND

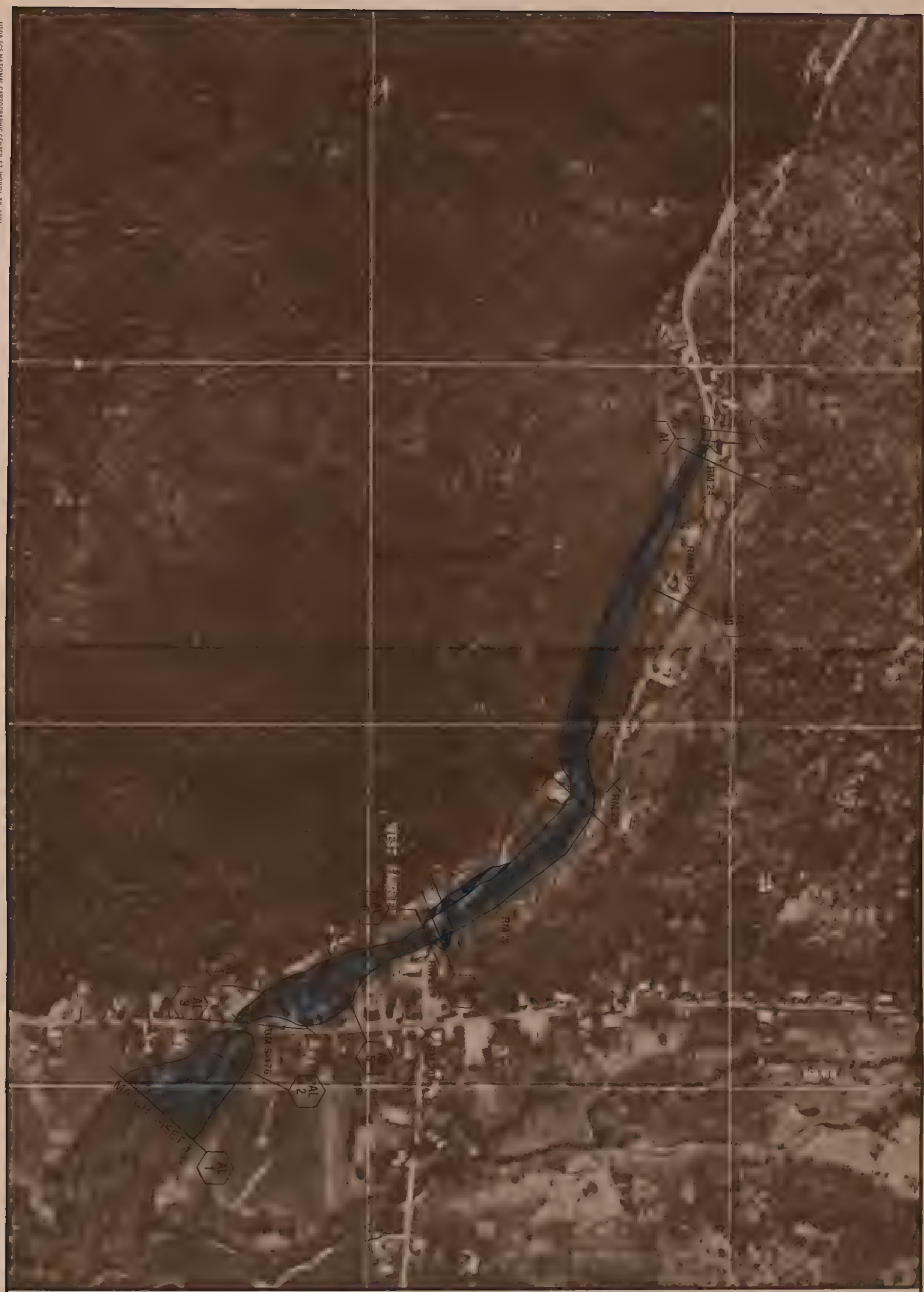
- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- (3) CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

OMPOMPANOOSUC RIVER

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
— WEST FAIRLEE —
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT



100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

OM 4 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 4 BENCH MARK

Note. Flood Boundaries shown may vary from actual ground location. See narrative for use of data.

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

SHEET 4 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

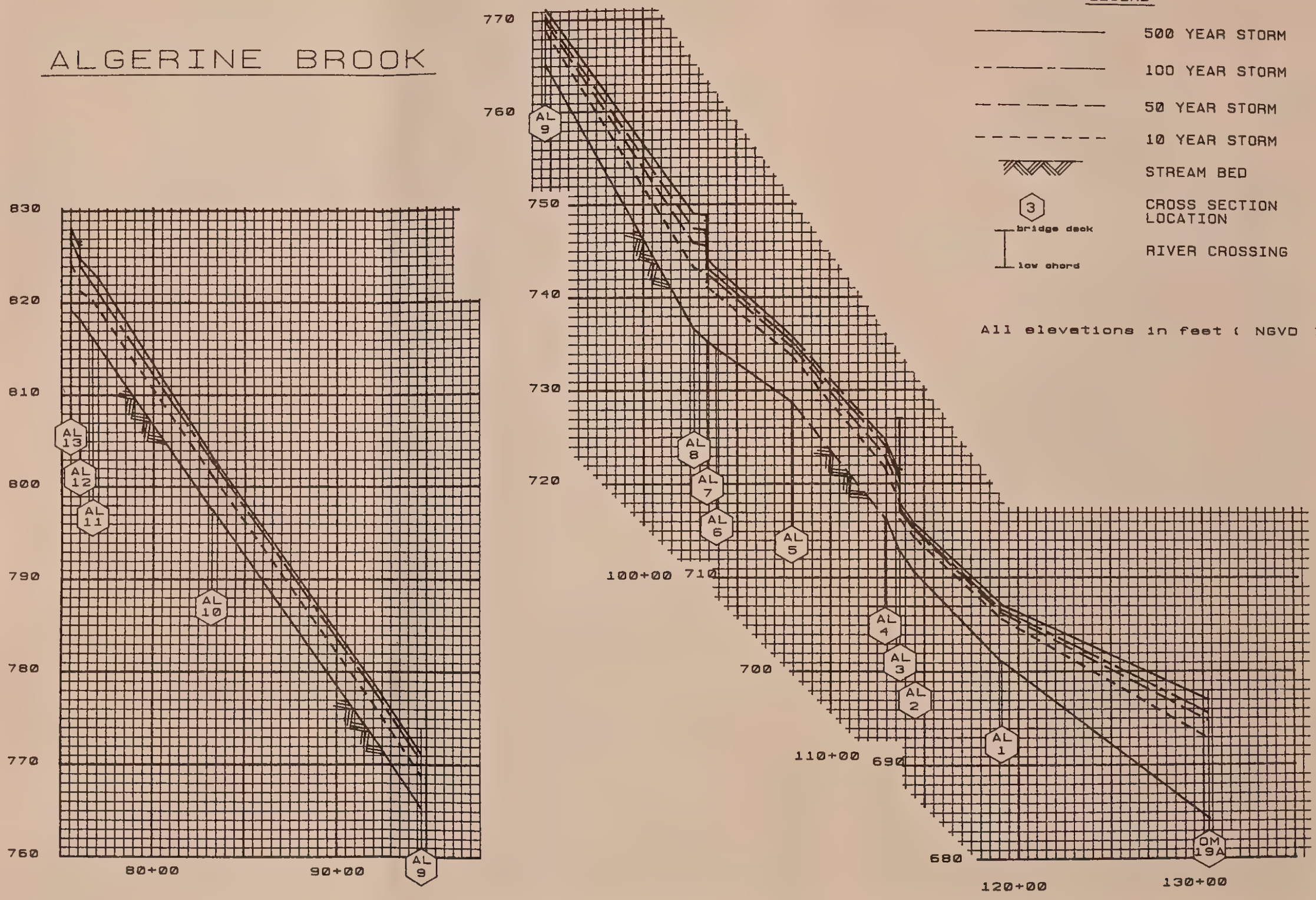
FLOOD HAZARD AREA

ALGERINE BROOK

USDA SCS NATIONAL CARTOGRAPHIC CENTER, FT WORTH TX 1991

MAY 1988 1003568

ALGERINE BROOK



LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- 3 — CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

All elevations in feet (NGVD).

FLOOD PROFILES

ALGERINE BROOK

U.S. DEPARTMENT OF AGRICULTURE
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-WEST FAIRLEE-
FLOODPLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

OM 5 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 4 BENCH MARK

Note: Flood Boundaries shown may vary from actual ground location. See narrative for use of data.

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

SHEET 5 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

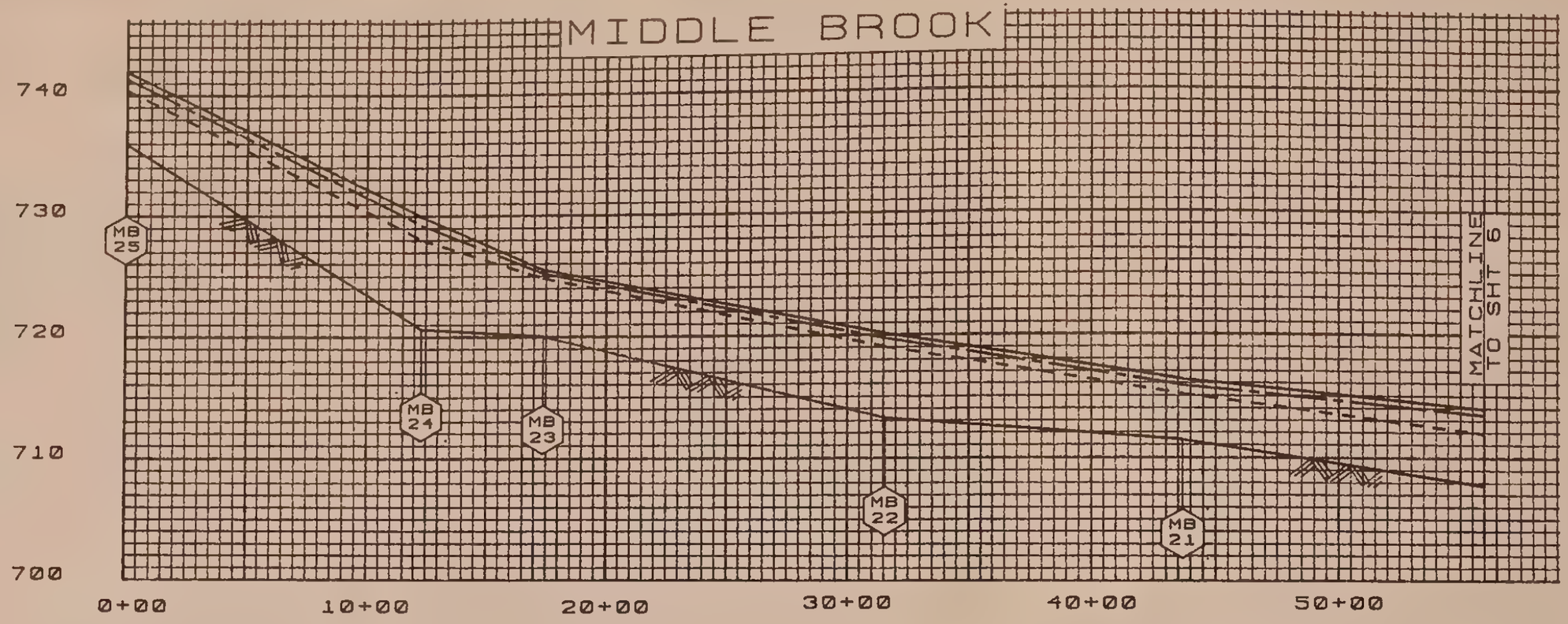
FLOOD HAZARD AREA

MIDDLE BROOK

USDA SCS NATIONAL CARTOGRAPHIC CENTER FT WORTH TX 1991

MAY 1988 1003568

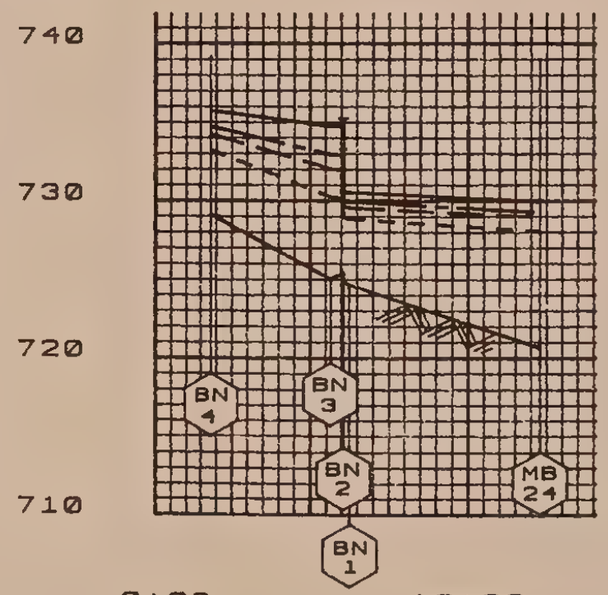
MIDDLE BROOK



All elevations in feet (NGVD)

LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- 3 — CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING



BEAR NOTCH BROOK

FLOOD PROFILES

MIDDLE BROOK

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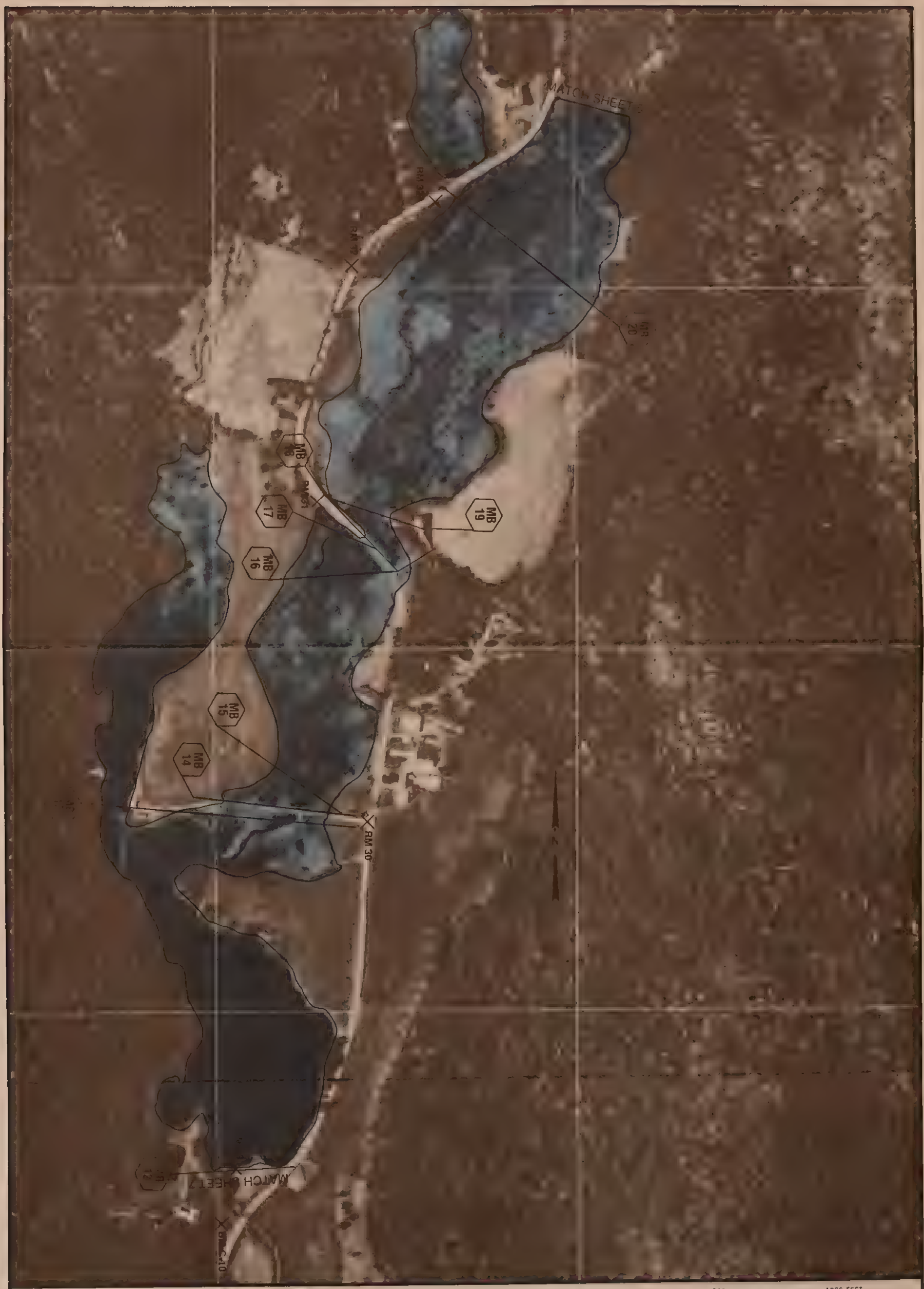
SOIL CONSERVATION SERVICE
— WEST FAIRLEE —
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT



100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

OM 6 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 5 BENCH MARK

Note Ffood Boundaries shown may vary from actual ground locat on See narrative for use of data

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

SHEET 6 OF 10

U.S. DEPARTMENT OF AGRICULTURE
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FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

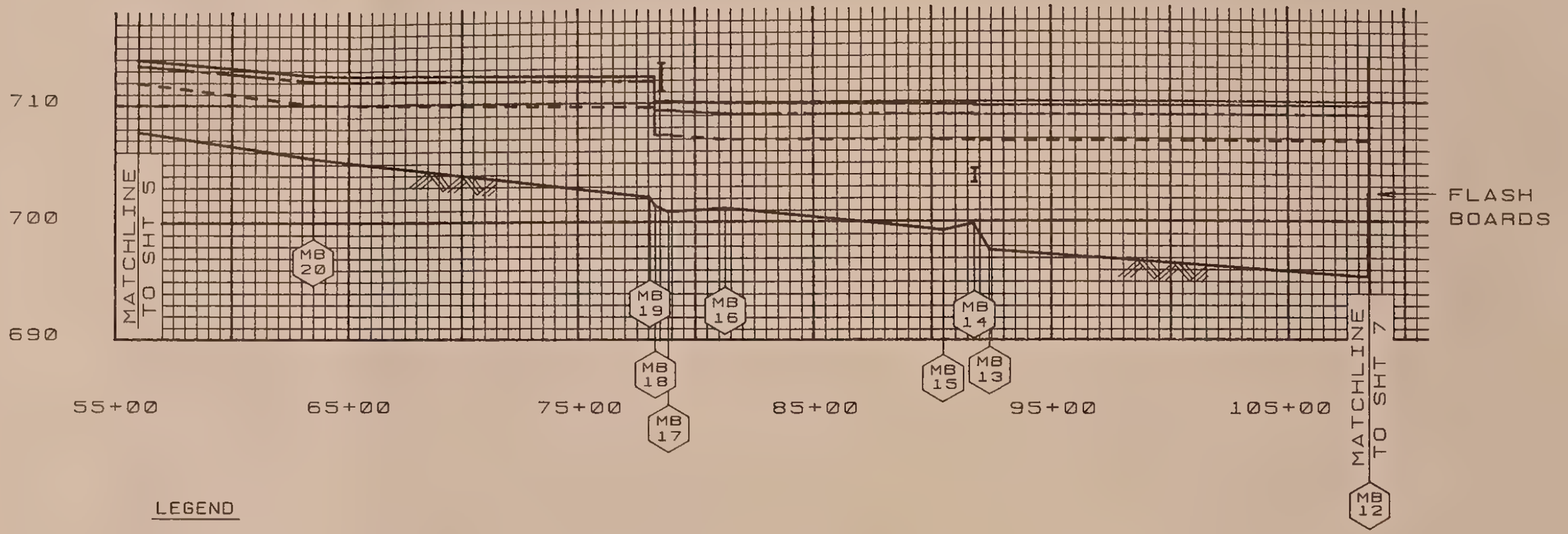
FLOOD HAZARD AREA

MIDDLE BROOK

MAY 1988 1003568

USDA SCS NATIONAL CARTOGRAPHIC CENTER FT WORTH TX 1991

MIDDLE BROOK



LEGEND

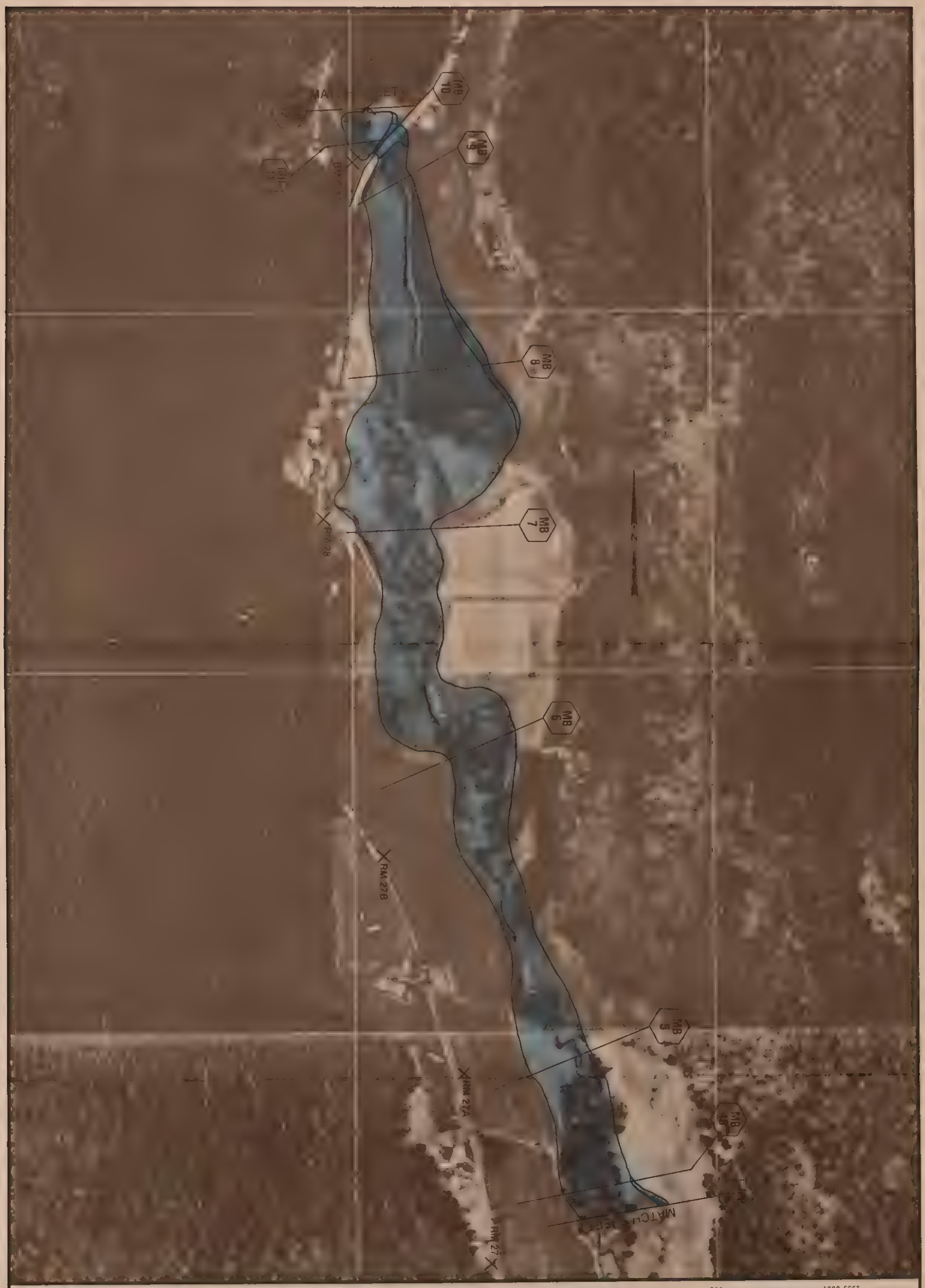
- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- (3) CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

MIDDLE BROOK

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT



100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

MB 7 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 6 BENCH MARK

Note Flood Boundaries shown may vary from actual ground location. See narrative for use of data.

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

SHEET 7 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

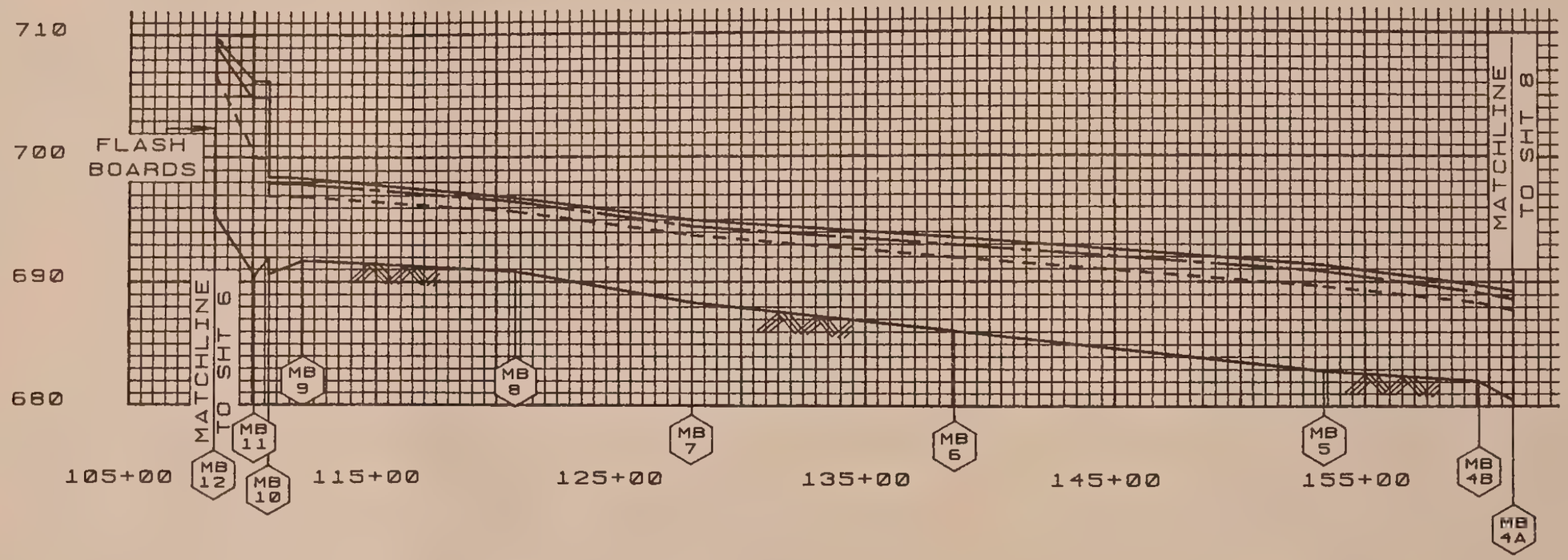
FLOOD HAZARD AREA

MIDDLE BROOK

MAY 1988 1003568

USDA SCS NATIONAL CARTOGRAPHIC CENTER FT WORTH TX 1991

MIDDLE BROOK



LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- 3 — CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

MIDDLE BROOK

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
— WEST FAIRLEE —
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

SHEET 8 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

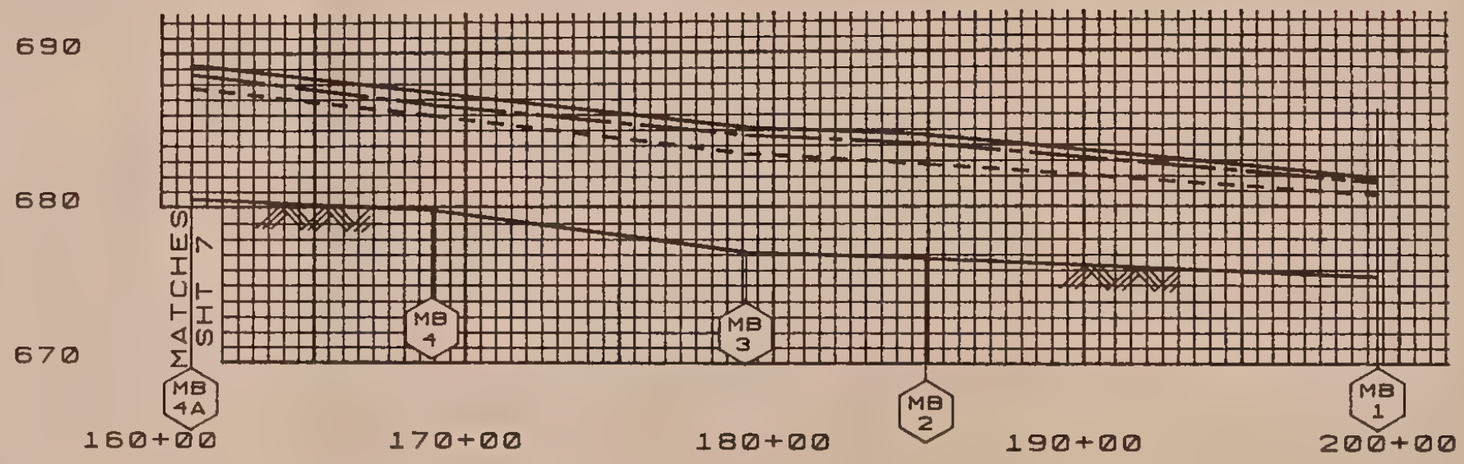
FLOOD HAZARD AREA

MIDDLE BROOK

USDA SCS NATIONAL CARTOGRAPHIC CENTER, FT WORTH, TX 1991

MAY 1988 10035G8

MIDDLE BROOK



LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- (3) CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

MIDDLE BROOK

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

BB 9 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 8 BENCH MARK

Note Flood Boundaries shown may vary from actual ground location See narrative for use of data

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

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FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

FLOOD HAZARD AREA

BLOOD BROOK

SHEET 9 OF 10

USDA SCS NATIONAL CARTOGRAPHIC CENTER, FT WORTH, TX 1991

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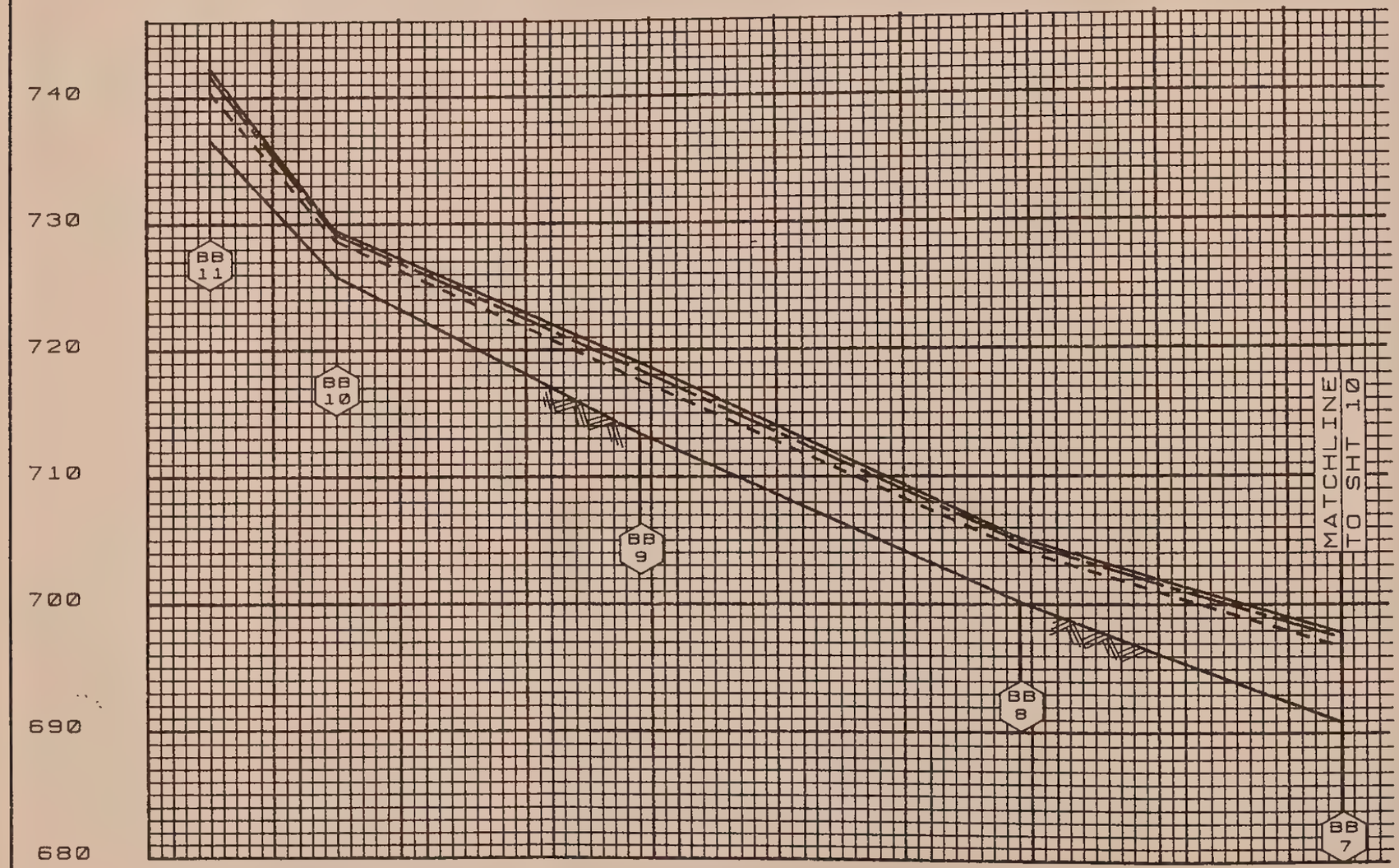
BLOOD BROOK



All elevations in feet (NGVD)

LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- (3) CROSS SECTION LOCATION
- bridge deck / low chord — RIVER CROSSING

FLOOD PROFILES

BLOOD BROOK

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
—WEST FAIRLEE—
FLOODPLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

100 YEAR FLOOD AREA

500 YEAR FLOOD AREA

BB 5 SURVEYED CROSS SECTION

STREAM CHANNEL

RM 20 BENCH MARK

Note Flood Boundaries shown may vary from actual ground location. See narrative for use of data.

SCALE 0 500 1000 FEET

0 100 200 300 METERS

APPROXIMATE

SPRING 1982 PHOTOGRAPHY BY VERNON GRAPHICS, INC

SHEET 10 OF 10

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WEST FAIRLEE
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

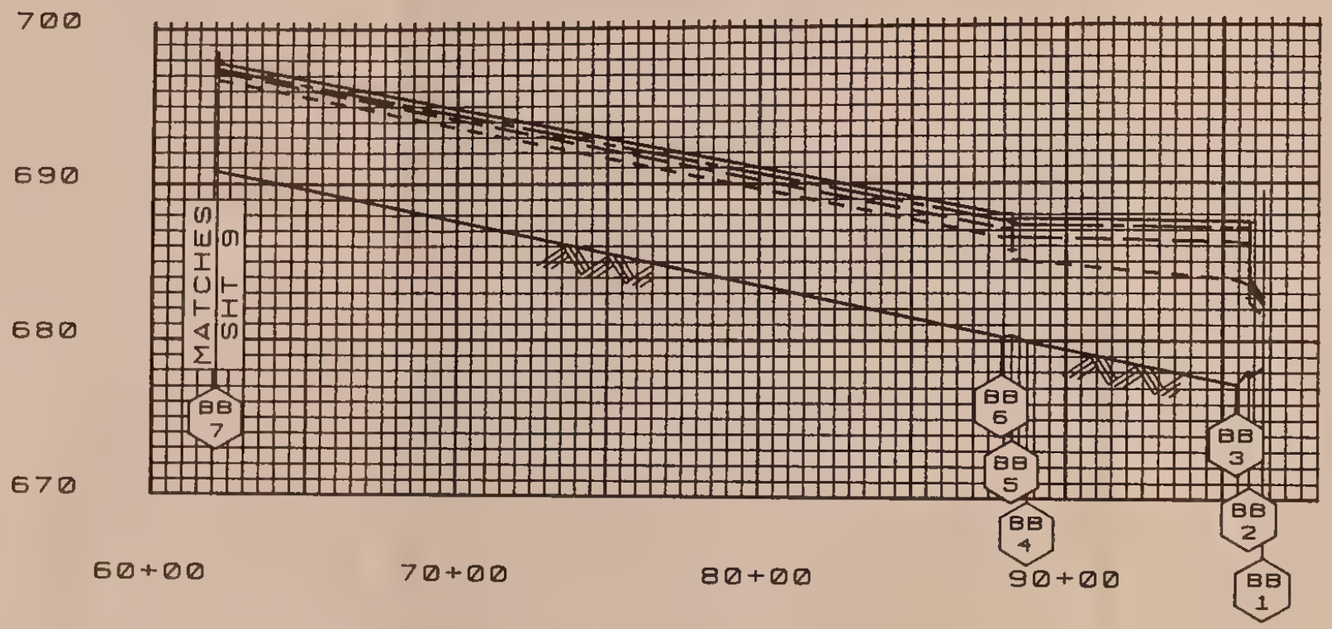
FLOOD HAZARD AREA

BLOOD BROOK

MAY 1988 1003568

USDA SCS NATIONAL CARTOGRAPHIC CENTER FT WORTH TX 1991

BLOOD BROOK



LEGEND

- 500 YEAR STORM
- 100 YEAR STORM
- 50 YEAR STORM
- 10 YEAR STORM
- STREAM BED
- CROSS SECTION LOCATION
- RIVER CROSSING

All elevations in feet (NGVD)

FLOOD PROFILES

BLOOD BROOK

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
— WEST FAIRLEE —
FLOOD PLAIN MANAGEMENT STUDY
ORANGE COUNTY, VERMONT

Investigations and Analysis

Approximately 8 miles of differential levels to establish vertical control and 53 cross sections were surveyed for this study. Surveys are referenced to National Geodetic Vertical Datum (NGVD) of 1929. Reference mark Descriptions and Elevations are listed in preceding tables and located on appropriate photomaps.

Flood runoff volumes and flow rates were developed using the SCS computer model described in Technical Release No. 20 (Reference No.8). Flow-frequency values from this hydrologic model were adjusted as necessary in analyzing them along with values from similar gaged watersheds. Flood plain geometry and hydraulic characteristics were acquired by field surveys along the river systems. Flood-frequency surfaces were computed using the adjusted flows from the hydrologic model as inputs to water surface profile development, using the Soil Conservation Service's Technical Release No. 61 (Reference No.9). The products of these analyses are the basis for much of the boundary elevation and profile information contained in this report. This report's information reflects coordination with evaluations made by others.

The flood stages provided for selected storm frequencies should be considered as minimum elevations for the prescribed uses of this report. Certain indeterminate factors and conditions affecting future flood flows could cause higher flood stages than indicated. These include ice and debris, clogging of bridges and culverts, sediment, ice and debris jams along the channel and flood plain, and changes in the vegetative character of the channels and flood plain.

Analysis of the hydraulic characteristics of streams were carried out using the SCS computer program WSP-2 (Ref. 9). Cross section data for the streams and structural geometry of bridges and culverts were obtained by transit surveys. From stage-discharge curves, elevations and flood boundaries could be determined at the cross sections. Straight line interpolations of the elevations were used for flood profiles between cross sections. Flood boundaries between cross sections were drawn on the photomaps using USGS topographic maps and aerial photos as a guide. The results were reviewed with state and town officials to eliminate any obvious errors.

The photomaps were assembled as strips from spring 1974, 1:5000 scale,Vermont Mapping program, Orthophoto Maps by the USDA-SCS Fort Worth, Texas Cartographic Unit.

Safety and Protection

This flood plain management study is an aid to persons living in flood prone areas. If your home is within the flood plain, the following information should serve as a guide for dealing with floods.

Being well informed is your best protection. It is extremely important to know where to go in the event of a flood. Remember that roads are often built in valleys where floodwaters will most likely go. You should reach higher ground, and it may be easier and safer to do this on foot, rather than by car.

The major causes of floods are melting snows and rainfall. Listen to the weather reports and be aware of the chance of flooding. Never ignore a flood warning. Listen for emergency instructions and follow instructions given.

If it is necessary for you to evacuate your home, do so quickly and cautiously. Follow evacuation instructions that are given. Do not try to take all of your belongings with you. Take necessary personal items such as eyeglasses or medicines, flashlights, a small supply of canned food, a can opener and several blankets.

If you are traveling by car you may encounter these hazards:

- washed-out roads or bridges
- undermined roadway
- landslides
- fallen rocks
- downed powerlines
- floating debris

Watch out for these hazards carefully.

If it is not necessary to evacuate your home, there are precautions you should proceed with.

Fill large containers with water and after doing so shut off the main water valve to protect the clean water already in your water system. Be certain to shut off your water heater since no water will be going to it.

As long as electric service is available it may be used safely unless the main circuits are flooded. In such a case you will reduce the risk of electrical shock and short circuits if you turn the power off. Do not touch the switch if you are wet or standing in water. Unless you detect a gas leak, you may continue to use gas systems.

Be aware that floods often produce fire hazards. Watch for broken or leaking gas or oil lines, flooded electrical circuits, flooded furnaces and other appliances, and inflammable or explosive materials which may come from upstream.

Anchor or move inside any belongings such as trash cans, toys, lawnmowers, etc. They may become hazards to people downstream if they are washed away.

Move livestock to high, open ground and if possible keep them from drinking flood water or eating feed soaked with flood water.

The following items could help improve your chances of survival if a flood occurs:

- portable radio and spare batteries
- first aid kit
- flashlights and spare batteries
- foods which require little or no cooking and no refrigeration
- blankets
- rope
- hand tools
- drinking water

Precautions taken to reduce losses from flooding are called floodproofing.

The basement walls of your home are probably not built to withstand the additional pressures of water-soaked soils. You will have less damage if you allow floodwaters to come in. When you receive a flood warning, remove articles from the basement and open a basement window. Fuse boxes and other equipment should not be located in the basement.

Floodproofing for homes with adequately reinforced basement walls could include: sealing cracks in walls and floors with hydraulic cement, installation of a sump pump with a reliable power source, placing heavy screens over windows to prevent breakage from floating objects, and placing valves on main drain lines to prevent backup of water.

It is important to remember that floodproofing can help reduce damages, it does not make it safe to remain in your home during a flood.

After a flood, reenter buildings with caution. Watch for fire hazards and falling debris. Do not use appliances until they have been checked for damage. Do not use any food or water which may be contaminated.

Normal home insurance does not cover flooding. Ask your insurance agent about federally subsidized flood insurance. Not all agents handle flood insurance and you may have to contact several of them.

Many people are hurt or killed during or after a flood by their own carelessness. Know before hand what to do if a flood occurs. Your local Civil Defense Agency can help you with any questions you may have.

OMPOMPANOOSUC RIVER

Elevation (NGVD), Velocity (FPS), Discharge (CFS)

CROSS SECT.	CHANNEL ELEV.	10-YR STORM ELEV. FT.	10-YR STORM VEL FPS	10-YR STORM DSCHG CFS	50-YR STORM ELEV FT	50-YR STORM VEL FPS	50-YR STORM DSCHG CFS	100 YR STORM ELEV FT	100 YR STORM VEL FPS	100 YR STORM DSCHG CFS	500-YR STORM ELEV FT	500-YR STORM VEL FPS	500-YR STORM DSCHG CFS
OM1	763	770.2	6.1	1850	771.5	6.1	3100	772	6.3	3850	772.9	6.7	5250
OM2	746.9	754.6	4.1	1850	755.2	4.4	3100	755.6	4.3	3850	756	4.7	5250
OM3	743.3	750.9	4.1	1850	751.8	4	3100	752.1	4	3850	752.8	3.8	5250
OM4	733.8	742.5	3.4	1850	744	3.5	3100	744.7	3.5	3850	745.8	3.7	5250
OM6	733.2	740.9	3.8	1850	742.6	4.3	3100	743.3	4.3	3850	744.3	4.4	5250
OM7	729.6	737	4.1	1800	738.6	4.6	3100	739.3	4.9	3800	740.4	5.2	5150
OM8	724.7	733	5	1800	734.6	5.4	3100	735.2	5.7	3800	736.2	6	5150
OM9	722.2	729.2	5.7	1800	731	6.1	3100	731.4	6.5	3800	732.4	6.3	5150
OM10	712.8	719.2	5.4	1800	720.2	6.6	3100	720.6	7.3	3800	721.4	8.2	5150
OM11	712.8	716.6	3.7	1800	717.3	3.9	3050	717.6	4	3750	718.2	4.3	5100
OM13	711.5	716.1	3.6	1800	716.7	4.3	3050	716.9	4.6	3750	717.4	5.1	5100
OM14	714.1	715.8	5.7	1800	716.2	6.7	3050	716.4	7.1	3750	716.8	7.4	5100
OM15	703.9	713.9	4.2	1800	715.2	4	3050	715.9	3.9	3750	716.8	3.8	5100
OM16	699	706.2	6	1800	707.9	7.3	3000	708.6	8	3700	711.3	7	5050
OM18	698	704.3	4.9	1800	705.7	6.1	3000	706.4	6.7	3700	707.5	7.7	5050
OM19	693.1	700	4.6	1800	701.1	4.4	3000	701.6	4.4	3700	702.4	4.6	5050
OM19A	684.2	692.8	3.7	2900	694.7	3.6	4900	695.5	3.7	6050	696.9	4	8250
OM20	682.7	691.9	5.7	2900	693.5	7.3	4850	694.2	8.1	6000	695.2	9.4	8150
OM21	679.3	689.5	4.5	2850	690.7	4.2	4800	691.1	4.4	5950	691.8	4.6	8100
OM22	676.3	684.5	3.7	2850	686	3.5	4800	686.5	3.7	5900	687.3	3.9	8000
OM23	673.7	682.9	3.4	2850	684.7	2.6	4800	685.1	2.7	5900	685.9	2.9	8000
OM25	673.9	681.4	1.4	2750	682.8	1.5	4650	683.5	1.6	5750	684.7	1.7	7800

ALGERINE BROOK

Elevations (NGVD), Velocities (FPS), Discharge (CFS)

CROSS SECT.	CHANNEL ELEV	10-YR STORM ELEV FT	10-YR STORM VEL FPS	10-YR STORM DSCHG CFS	50-YR STORM ELEV FT	50-YR STORM VEL FPS	50-YR STORM DSCHG CFS	100-YR STORM ELEV FT	100-YR STORM VEL FPS	100-YR STORM DSCHG CFS	500-YR STORM ELEV FT	500-YR STORM VEL FPS	500-YR STORM DSCHG CFS
AL13	819.2	824.4	8.1	1200	826	9.4	2000	826.8	10	2450	828.1	10.6	3350
AL11	816.2	820.3	7.3	1200	821.4	8.8	2000	822	9.2	2450	822.7	9.7	3350
AL10	797.5	801.3	6.1	1200	802.4	6.4	2050	802.8	6.5	2500	803.4	7.1	3400
AL9	765.2	768.9	7.1	1250	769.9	8.4	2150	770.4	8.7	2650	771.2	9.4	3600
AL8	736.6	743.2	5.6	1300	745.8	5.4	2250	747.4	5.1	2750	749	5.2	3750
AL6	734.5	740.3	6.5	1300	741.7	7.8	2250	742.3	8.4	2750	743.1	9.7	3750
AL5	728.8	733.8	6.5	1300	734.8	7.4	2250	735.3	7.2	2750	735.9	7.9	3750
AL4	716.4	721.8	9.6	1350	723.1	10.9	2250	724.2	9.7	2800	724.8	10.7	3800
AL2	710.5	714.2	4.6	1350	715	5.4	2250	715.2	5.8	2800	715.7	6.3	3800
AL1	701.1	705.6	4.2	1350	706.2	4.1	2300	706.6	4.1	2850	707.1	4.1	3900

MIDDLE BROOK
Elevation (NGVD), Velocity (FPS), Discharge (CFS)

CROSS SECT.	CHANNEL ELEV	10-YR STORM ELEV FT	10-YR STORM VEL FPS	10-YR STORM DSCHG CFS	50-YR STORM ELEV FT	50-YR STORM VEL FPS	50-YR STORM DSCHG CFS	100-YR STORM ELEV FT	100-YR STORM VEL FPS	100-YR STORM DSCHG CFS	500-YR STORM ELEV FT	500-YR STORM VEL FPS	500-YR STORM DSCHG CFS
MB1	675.5	680.7	4.1	500	681.3	6.2	800	681.5	7.3	1000	681.8	9.2	1350
MB2	676.7	682.7	0.9	500	683.5	1	800	683.4	1.1	1000	684.6	1.2	1350
MB3	677.1	683.4	1.2	500	684.1	1.2	800	684.6	1.3	1000	685.1	1.3	1350
MB4	679.8	685.9	1.2	500	686.4	1.5	800	686.7	1.6	1000	687.4	1.6	1350
MB4A	680.5	687.7	1.3	500	688.3	1.5	800	688.8	1.5	1000	689.2	1.6	1350
MB4B	682	688.3	1.3	550	688.8	1.5	900	689.2	1.6	1100	689.7	1.8	1500
MB5	682.8	689.6	1.6	550	690.3	1.7	900	690.8	1.7	1100	691.3	1.9	1500
MB6	686	691.9	1.2	550	692.5	1.4	900	692.9	1.5	1100	693.4	1.7	1500
MB7	688.3	693.7	1.4	550	694.2	1.7	900	694.5	1.8	1100	694.8	2	1500
MB8	690.8	695.6	1.5	600	696.1	1.6	950	696.4	1.7	1200	696.7	1.9	1650
MB9	691.7	696.8	1.7	600	697.5	1.9	950	697.8	2	1200	698.3	2.3	1650
MB11	690.5	700	1.6	600	702.9	1.5	950	704.9	1.4	1200	706.2	1.6	1650
MB12	695.4	706.8		600	708.5		950	709		1200	709.7		1650
MB13	697.7	706.8	0.4	550	708.5	0.5	900	709	0.5	1100	709.7	0.6	1500
MB15	699.2	706.9	0.6	550	708.6	0.8	900	709.1	0.9	1100	709.8	1.1	1500
MB16	701.1	707	0.4	600	708.7	0.5	950	709.2	0.5	1200	710	0.6	1650
MB17	700.8	707.3	1.4	600	708.9	1.4	950	709.4	1.5	1200	710.2	1.7	1650
MB19	702	709.7	0.9	600	711.5	1	1050	711.8	1.2	1300	712.2	1.5	1750
MB20	705.4	710.1	0.5	600	711.7	4	1050	712	0.5	1300	712.6	0.5	1750
MB21	711.4	715.1	1.1	600	715.6	1.1	1050	715.9	1.2	1300	716.3	1.3	1750
MB22	713.2	719	1.2	650	719.4	1.4	1150	719.7	1.5	1400	720.1	1.6	1900
MB23	720	724.8	1.5	650	725.1	1.5	1150	725.2	1.7	1400	725.5	1.9	1900
MB24	720.6	728	3.1	650	728.9	3.5	1150	729.2	3.7	1400	729.9	4.1	1900
MB25	735.9	740.4	2.5	450	741	2.8	750	741.3	2.9	900	741.9	2.9	1200
BN1	724.6	728.8	0.9	250	729.5	1	400	729.9	1	500	730.5	1	700
BN3	725	730.2	1.7	250	732	1.5	400	732.9	1.5	500	734.7	1.4	700
BN4	729.1	733.2	3	250	734.2	2.8	400	734.7	2.6	500	735.7	2.1	700

BLOOD BROOK
Elevation (NGVD), Velocity (FPS), Discharge (CFS)

CROSS SECT.	CHANNEL ELEV	10-YR STORM ELEV FT	10-YR STORM VEL FPS	10-YR STORM DSCHG CFS	50-YR STORM ELEV FT	50-YR STORM VEL FPS	50-YR STORM DSCHG CFS	100-YR STORM ELEV FT	100-YR STORM VEL FPS	100-YR STORM DSCHG CFS	500-YR STORM ELEV FT	500-YR STORM VEL FPS	500-YR STORM DSCHG CFS
BB1	678.3	681.5	7.4	450	682.3	7.3	750	682.4	8	900	682.7	8.7	1200
BB3	677.2	683.8	1.6	450	686.2	0.8	750	687.1	0.6	900	687.5	0.7	1200
BB4	679.9	685	1.5	450	686.5	1	7500	687.3	0.9	900	687.7	1	1200
BB6	680.2	686.5	0.7	450	687.1	0.9	7500	687.6	1	900	688	1.1	1200
BB7	690.8	696.7	1	450	697.2	1.1	7500	697.4	1.1	900	697.8	1.3	1200
BB8	700.1	704.2	1.3	400	704.6	1.3	650	704.8	1.4	800	705.1	1.5	1100
BB9	713.3	717.5	2	400	717.9	2.5	650	718.3	2.6	800	718.9	2.8	1100
BB10	725.8	728.6	2	400	729	2.4	650	729.1	2.6	800	729.4	2.9	1100
BB11	736.6	740.4	5.4	400	741.2	6.5	650	741.7	6.9	800	742.3	7.6	1100

Town of West Fairlee Reference Marks

Number	Elevation	and Description
BMC4	775.921	A USGS Tablet on the north upstream bridge abutment at Brimstone Corners.
RM1	770.06	A nail and disk in a 2 foot Dia. stump 300 feet north of white house and barn.
RM2	769.95	A chiseled square on the north end of concrete culvert headwall 500 feet south of a white mobile home.
RM3	745.45	A chiseled square on the west downstream corner of a bridge on private road to a white house.
RM4	747.34	A chiseled square on the northeast corner of a concrete culvert headwall at north edge of driveway to small gray house.
RM5	737.93	Top of concrete post near culvert outlet south of drive to tan modular home.
RM6	760.10	A nail and disk on power pole 205/13 on west side of Route 113 across road from pond and red garage.
RM7	745.10	A nail and disk in power pole C88 3/200-1 on south side of driveway to a white house and small power dam north of West Fairlee Village.
RM7A	722.80	A nail and disk in west side of a power pole 3/200-2 just east of private bridge over power dam north of West Fairlee Village.
BMTH-35	719.40	A Vermont Agency of Transportation Tablet on the west downstream abutment of a concrete bridge on town road in Village of West Fairlee.
RM8	700.24	A nail and disk on north side of 5-stemmed butternut tree on west side of river about 700 feet south of bridge on town road in West Fairlee Village.
RM9	716.09	A nail and disk in power pole 3/177/259 across Route 113 from turnout just south of West Fairlee Village.
BMSA-48	686.86	A chiseled square on east upstream abutment of bridge on connector road from Route 113 and Route 244.

Town of West Fairlee Reference Marks (Cont'd)

Number	Elevation	and Description
BMC3-1928	719.195	A USGS Tablet on top of boulder at west side of connector road between Route 113 and Route 244 about 0.9 mile south of West Fairlee Village.
BMS-176	727.19	A chiseled square on upstream south wingwall of Route 113 bridge over Algerine Brook in West Fairlee.
RM20	738.67	A nail in power pole 3/192/69/68/6/274 at northeast corner of road intersection in West Fairlee Village.
RM21	748.37	A chiseled square on east downstream corner of bridge deck at junction of Beanville Road and Town Road over Algerine Brook in West Fairlee Village.
RM22	774.14	A nail and disk in power pole 37/2/6/279 on south side of Beanville Road directly across from a brown trailer home.
RM23	780.80	A nail and disk in power pole 37/5/6/282 on north side of Beanville Road and downstream end of large parking area.
RM23B	804.26	A nail and disk in power pole 9/286 on north side of Beanville Road and across road from house with cedar siding.
RM24	826.96	A chiseled square on the downstream north abutment of private bridge over Algerine Brook.
RM26	689.38	A chiseled square on west upstream corner of Route 244 bridge over Middle Brook at outlet to Lake Fairlee.
RM26B	696.42	A nail and disk in power pole 33 on south side of Middle Brook Road across from turnout and about 0.25 mile north of Route 244.
BMX	705.315	A chiseled square 164 feet south of barn and 27 feet west of centerline of Middle Brook Road approximately 0.3 mile north of Route 244.
RM26C	693.40	A nail and disk in unnumbered power pole on north side of drive to garage of white house.

Town of West Fairlee Reference Marks (Cont'd)

Number	Elevation	Description
RM26D	709.92	A nail and disk in power pole 8 about 400 feet south of a white house, across from a large field on west side of Middle Brook Road.
RM27	695.93	A nail in power pole 34/10/7/10 just north of 2-story white house on west side of Middle Brook Road.
RM27A	707.20	A nail and disk in power pole 13/3 about 200 feet north of small stream across field on east side of Middle Brook Road.
RM27B	713.25	A nail in power pole 15/15 about 500 feet north of farm house on hill on east side of Middle Brook Road.
RM28	714.16	A nail in 16 inch Red Maple at south corner of drive to red house on east side of Middle Brook Road.
RM29	707.73	A chiseled square on northeast corner of concrete spillway at outlet of Beebe Pond.
BMC-10	705.294	A USGS Tablet stamped C-10-1928 in a ledge about 6 inches below ground level, 268 feet northeast of West Fairlee Hill Road and 96 feet perpendicular to Middle Brook Road and 100.6 feet east of southeast corner of house on hill.
RM30	713.40	Nail in power pole 32/32 of junction of private road and Middle Brook Road.
RM31	715.73	Nail in power pole 37/37-1/2, 50 feet south of Jareckie Residence Drive on west side of Middle Brook Road.
RM32	721.00	Nail in power pole 43/43 on west side of Middle Brook Road about 0.9 mile north of West Fairlee Hill Road.
RM32A	718.23	Nail and disk in power pole 44/44 on east side of Middle Brook about 1.0 mile north of West Fairlee Hill Road.
RM33	721.04	Nail in power pole 48/48 on east side of Middle Brook Road about 1.1 miles north of West Fairlee Hill Road.
RM33A	731.14	Nail and disk in power pole 52/52 on east side of Middle Brook Road about 0.75 mile south of West Fairlee Center.

Town of West Fairlee Reference Marks (Cont'd)

Number	Elevation	and Description
RM33B	726.64	Nail and disk in power pole 57/57 on east side of Middle Brook Road approximately 0.5 mile south of West Fairlee Center.
RM33C	739.69	Nail and disk in power pole 63/63 on west side of Middle Brook Road approximately 0.25 mile south of West Fairlee Center.
RM36B	736.99	Nail and disk in power pole 55/7/65 in field, downslope of old red house on east side of Middle Brook Road approximately 0.2 mile south of West Fairlee Center.
RM36A	736.05	Nail and disk in power pole 56-1 at drive to Durkee residence in West Fairlee Center.
RM37	743.70	A nail in power pole 10/34/585 on east side of Middle Brook Road, south of private road, 200 feet north of West Fairlee Center Church.
RM39	686.33	A chiseled square on the southeast corner of wingwall of bridge on sideroad approximately 0.1 mile north of Route 244.
RM42	698.23	Nail and disk in 18 inch Black Cherry on east side of Blood Brook at the south end of a long clearing approximately 0.5 mile north of Route 244.
RM43	705.72	Nail and disk in 6 inch Basswood on east side of Blood Brook approximately 0.7 mile north of Route 244.
RM45	717.60	Nail and disk in 18 inch Pine on west side of Blood Brook approximately 0.9 mile north of Route 244.
RM47	743.95	Nail and disk in power pole 32/16-1/27A on west side of Blood Brook Road approximately 1.2 miles north of Route 244 and 450 feet south of a side road to the west.
RM48	751.13	A chiseled square on the southwest downstream corner of a culvert headwall on sideroad approximately 1.3 miles from Route 244.